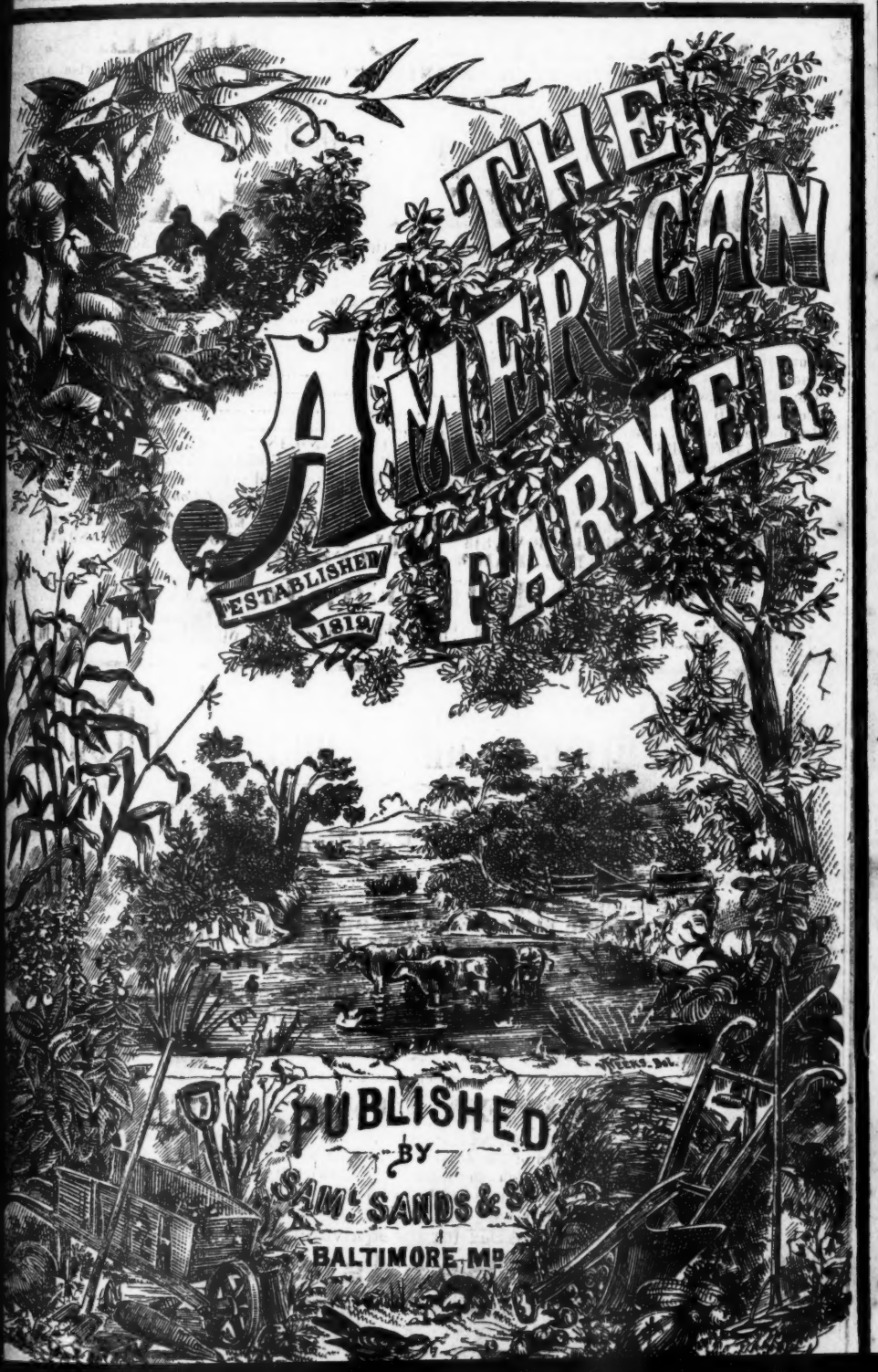
AUCUST, 1876.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FARMER
ESTABLISHED
1819
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Organic Matter	40.12 per cent.
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Inorganic Matter	56.14 per cent.
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Containing Bone Phosphate of Lime	53.52 per cent.
Insoluble Matter	2.51 per cent.

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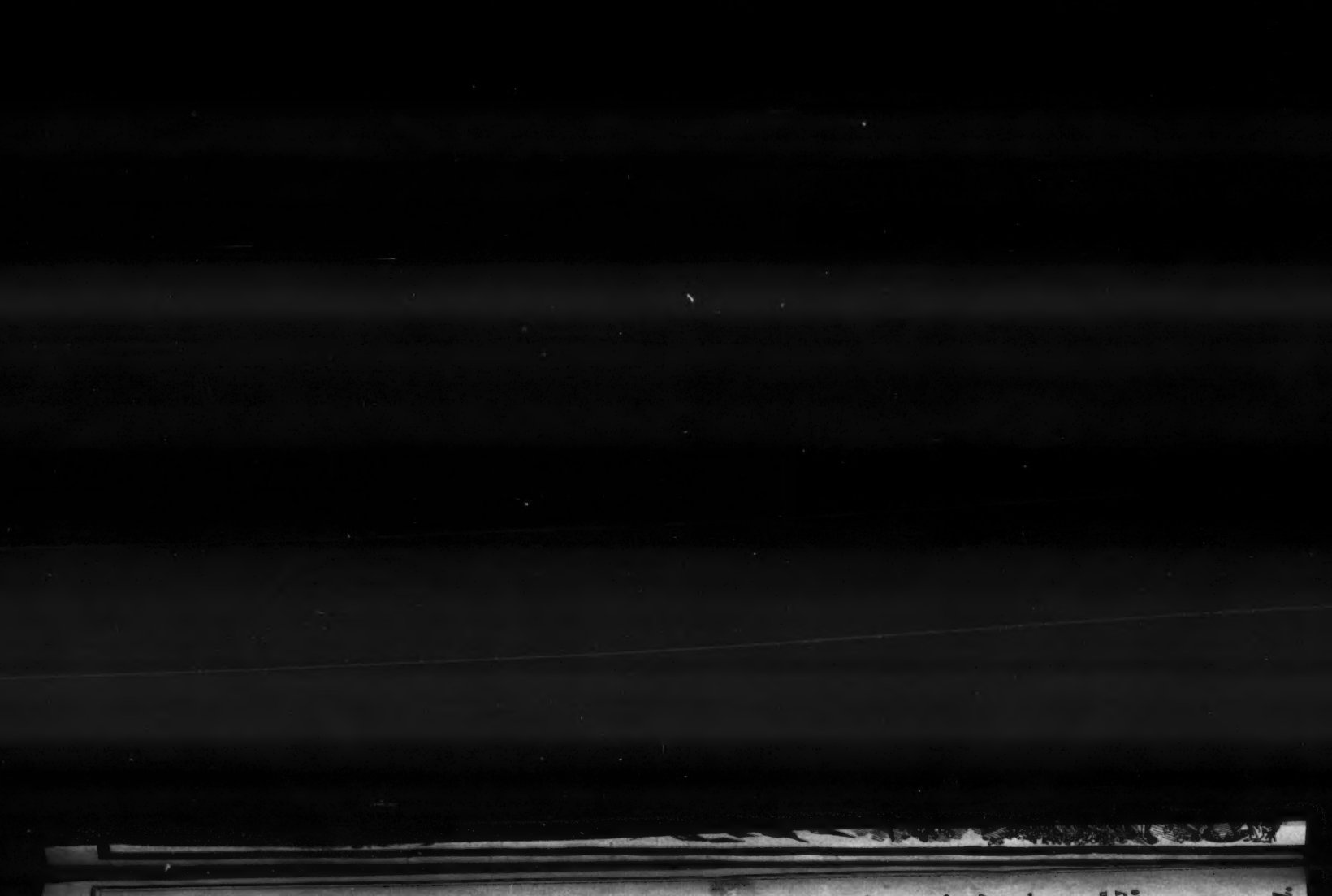

Edwards – Hawkins

THE

AMERICAN FARMER.

"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." . . . . . *Virg.*

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VOL. V.—NO. 8.] AUGUST, 1876. [NEW SERIES.

Agricultural Education.

A Paper read before the Industrial Section of the National Educational Association, Baltimore, July 11, 1876,
By DR. E. M. PENDLETON, *Professor of Agriculture, State College of Agriculture and Mechanic Arts, University of Georgia.*

In discussing the legitimate duties of an agricultural professor, we lay down this postulate: Agriculture should be taught as a science. Other propositions which grow out of this will be considered in connection with it, such as its negative: Agriculture should not be taught as an art, and the agricultural professor should be an experimentalist, that he might substantiate doubtful truths and develop others from the arcana of nature.

We shall endeavor in the outset to find out, if possible, what the Congress of the United States expected of the Agricultural College as established by their munificent donation of public lands, estimated to be worth six millions of dollars. If we can ascertain the reasons which influenced them, we have a foundation on which to build the logic of this question. Without entering into particulars, we simply state a few facts by which the distinguished gentleman from Vermont, who introduced the bill, succeeded in convincing Congress that these institutions were a necessity of the times. He showed from the statistics of the country that in one single decade (from 1840 to 1850) the wheat crop of the six New England States had fallen off about 50 per cent. and the potato crop about 60 per cent. That in the Southern and Western wheat-growing States, the decrease had been about the same as in New England; while the wheat crop in the State of New York from 1845 to 1860 had dwindled from thirteen to six millions of bushels. And so of the tobacco crop of Virginia, and the cotton crop of the Southern States. He further showed that as a consequence of this general deterioration of the soils of the country, while its population had increased 35 per cent. in a decade, the meat-producing animals had only increased 20 per cent. Then the restoration of our soils to their primal fertility was the underlying object of the whole scheme; and, growing out of this as a necessary result, an increase of all the agricultural products of the country, to feed and clothe its inhabitants, and supply a surplus for the increasing demands of the old world.

The legitimate inference from these facts is that agriculture must be taught as a science, not as an art. Can we suppose for a moment that Congress intended to have laborers trained in these institutions to work on farms, or to be skilled in the mere art of agriculture, so that they should labor themselves or direct the labor of others? Far from it. Their object was to develop the first minds in the land as scientific agriculturists, who could do for America what Liebig had done for Germany, Boussingault for France and Lawes for England. Yea, much more than this, they wanted men educated here who could take up agricultural science where these men left it, and add to it from year to year by induction, until it occupied the prominent position to which it is entitled in the eyes of the scientific world. In order to do this, the professor of agriculture must not be a mere teacher, but an experimentalist also, as the science which he proposes to teach is inchoate and there is much more to learn of it than there is to teach. We have but entered within the vestibule of this magnificent temple, and he who simply proposes to gather up the little taught by others and add nothing to the great store-house of human knowledge, is unworthy the position he occupies.

In order to accomplish these great ends, means must be discovered by which our soils might not only be cultivated without exhaustion, but restored to their former fertility, and even beyond it; and that by a process which would at the same time remunerate those who cultivate them. The projectors of this scheme foresaw that simple art, however skilled, could never work on this great problem; that nothing but science could do it, under a combination of gifted minds, with all the aids afforded by liberal endowments to institutions set apart for this specific purpose. Then we hesitate not to affirm that whenever these institutions, or any of the professors connected with them, magnify other studies to the detriment of these, so go outside of this curriculum for their teaching, they are outside the pale of their legitimate duties, and fail to compass the ends intended by the munificent donation of Congress. But how is he to learn and to

develop the truths of this complex science so as to be able to teach them to others? This can only be done by the establishment of experimental stations in connection with our agricultural colleges. How else can agricultural science be elucidated? How else can our soils be improved so as to produce remunerative crops? True, if we master what has been learned at the experimental stations in Europe, we can teach much of agricultural science in the abstract, and much that bears indirectly on our soils, climate and products; but what would the agricultural professor in Georgia know about the habitudes of the cotton plant, the soils adapted to it, the fertilizers requisite for it, the diseases to which it is subject, or anything else about it of importance to the planter from the experimental stations of England or Germany? And so of many different products in every section of the country.

In order to accomplish these great results, then, the agricultural professor has to be a student as well as a teacher, and we take it that the first great duty devolving upon him is to acquaint himself, by all the means in his power, with the soils, geological formations, agricultural products and climatology of the State in which he is called to teach agriculture. For, however much he may be learned in the truths which apply to agricultural science, there is much that immediately surrounds him that general science can never teach.

But there is a great difference between an experimental farm intended to elucidate agricultural science, and a model farm to teach the appliances of the agricultural art through the labor of students. Our settled conviction is, that manual labor is not and cannot be made a legitimate part of a college course. Parents cannot afford to pay board for their sons to do what they could better learn at home, even if their tuition is given them. The art of agriculture is very simple and may be learned much better by apprenticeship than any other way. We want intellectual men taught at our colleges to be learned agriculturists, who will be able to tell others what to do, not to be mere day laborers themselves. Young men are not sent to military schools to learn to drill as common soldiers, but to be commanders; and so we should teach our students, inspiring them with high thoughts of their profession, and teaching them that in agriculture, as in everything else, knowledge is power and money too.

"For just experience tells in every soil,
That those that think must govern those that toil."

In industrial schools purely it might be well to teach the science of agriculture, and have a model farm to apply scientific truths by the labor of young men as a means to their education. But as far as our knowledge goes these manual labor systems have failed. In connection with a university, where every boy should be placed upon an equal footing, and where there is always a discrimination in favor of knowledge as against labor, the scheme is Utopian to the last degree. Here I am well satisfied that the higher truths of agricultural science should be taught the student, and let him go out into the world and reap the practical benefit from his own observations; just like the physician, who soon learns to apply the science when he begins to practice the art, and often has to unlearn what was taught him at clinical lectures in the city hospitals, because the circumstances surrounding the broken-down, ill-fed patients were abnormal.

Baron Liebig has well said: "You must teach the science of agriculture as purely—that is, with as little reference to application—as the science of geometry or trigonometry is taught." And he says further: "The agricultural department of a college without an experimental station is simply nonsense. The only method by which you can possibly advance and develop agriculture is by experiments; that is the only plan, for there is no branch of industry so completely built up by experiments as agriculture."

When an agricultural professor has succeeded in convincing his students and his confreres that agriculture is a science, of high order, not pure and unmixed like mathematics, but a comprehensive system of natural science, so complex that it is difficult to acquire; so profound that it challenges the homage of the most gifted minds, he has surmounted perhaps the greatest barrier to success. For the fact cannot be disguised that many are impressed, especially young and unthinking minds, with the idea that agriculture is hardly respectable enough to be introduced as a regular course in a college curriculum. Not only students, but learned professors who teach from the musty tomes of classical lore handed down for ages, are apt to be impressed with the idea of their superiority over the man who has no higher calling than to teach the *whys* and *wherefores* of making bread and meat. Added to this fact all other teaching looks to the acquisition of some profession or pursuit in life, while it is a fact, up to this present hour, that agriculture is not an occupation to be sought for by students at college, or to be taught only by apprenticeship as an art, lower in the scale than the very simplest mechanical arts. Not respectable! Why, agriculture has to do with all three of the kingdoms of nature,—the vegetable, the mineral and the animal. It opens to the view of the admiring student the anatomy and physiology of plants. It unlocks the great storehouse of meteorology, "the treasures of the snow and hail; how the light is parted which scattereth the east wind upon the earth, and the way of the lightning and thunder, to cause it to rain on earth, to satisfy the desolate and waste ground, and to cause the bud of the tender herb to spring forth." It imparts a thorough knowledge of soils, geologically and agriculturally, the relations of heat and moisture to vegetable growth, the capillary and hygroscopic power of soils, both as to gases and fluids, their relations to all organic and inorganic substances existing in or above them. Intimately associated with this is the chemistry of the atmosphere, the relation of its oxygen, nitrogen, ozone and carbonic acid to plant life. The chemistry of soils, the mineral and organic elements of plants, and their forms and combinations in soils and products, and growing out of this the great laws that govern vegetable nutrition, embracing a scientific knowledge of fertilizers and natural manures. It also teaches the laws that govern animal nutrition; how plants organize food from minerals and gases, converting them into carbo-hydrates, oils and

albuminoids, to develop the animal heat, fat, bone and muscle of all domestic animals as well as of man himself. And then, it takes up special agricultural plants and field crops, peculiar to each state and every climate and soil, and tells of their botanical relations and habitudes, the diseases to which they are subject, and the insects which prey upon them, or upon each other for their benefit; thus opening up the relations of agriculture to the science of entomology.

All of these and many points not even touched upon here are embraced in a thorough course of scientific agriculture; so that he who teaches it must be a learned man, and he who learns it must be a hard student, and possess intellectual powers capable of grasping the most abstruse problems, and a wisdom to apply to economical uses what he has learned for the benefit of his fellow-man.

But we are met with the objection, where will so many scientists find employment, if we are not to learn men to do farm work at these institutions? From present indications it does not appear that there will be more to graduate with honor than will fill the high positions now offering on every hand to the learned agriculturist. Some are demanded as editors of our agricultural journals, some as commissioners in our agricultural bureaus and others as professors in our industrial colleges, while not a few will become the owners and directors of our large landed estates, or, having less means, head the squads on our smaller farms with strong arms and willing minds, by not only directing the labor and inculcating the principles they have been taught, but by setting the example of industry to their laborers, and thus become thrifty and independent. Out of more than two hundred students who have attended our course for the last four years, not more than three per cent. could ever aspire to become eminent scientific agriculturists. A number of others will be able to make leading men in their neighborhoods, and disseminate many agricultural truths they have acquired, for the benefit of the masses; others not availing themselves of the golden opportunities offered them or from natural incapacity will have to be reduced to the ranks in some one of the avocations of life.

It may not be amiss to mention a few of the great problems to be worked out in this department of the experimental sciences bearing directly upon the great question of food and clothing for the human race.

It is known that nitrogen is the only organic element exhausted from soils in its available forms, and needed to be applied for their restoration. It is known that this element constitutes four-fifths of the atmosphere, and all soils, even the most barren, contain enough of it within the depth of twelve inches to make several hundred crops. But because this element exists in unavailable forms, the product of the soil diminishes annually until the farmer has to turn them out to cultivate new lands, or buy nitrogen from the Pacific isles or the waste of our cities to restore his soils. The problem is, how may the nitrogen of the atmosphere be made to unite with oxygen or hydrogen, by some cheap process, so as to be made available as plant-food, or how may the organic nitrogen of the soil existing so abundantly be thus changed to accomplish the same beneficial purpose.

Another problem in reference to the same element: It is known that the nitrogen which the cereals take up from the soil is converted by plants into what we term albuminoids or flesh formers, and when eaten as food, is converted into flesh, which is constantly undergoing transformation: the food supplying new nitrogen, the muscles throwing off the old, which is carried out of the system in three forms, viz: Urea, hippuric and uric acids. It is further known that these substances readily decompose in a short time, the nitrogen uniting with the hydrogen, forming ammonia, which, being volatile, unites with the carbonic acid of the atmosphere and escapes into the upper regions. The problem is: "How can these substances be saved and utilized economically for the use of man, and thus prevent a waste of millions of pounds of nitrogen from every city and farm-yard in the land?" Similar problems might be stated in reference to all the important minerals entering into plants, especially phosphoric acid, the first mineral element exhausted from soils; the sparest of all the important elements; the one needed most for the seeds of all plants; and the one which, more readily than any other, passes into insoluble and unavailable forms; and so of potash, magnesia, iron, sulphur, and all plant constituents. These are questions of magnitude constantly rising, which it is expected of our agricultural professors to solve for the benefit of the cultivators of the soil.

The great discovery of Liebig, that soluble biphosphate of lime was the special form needed by plants, has had more to do with the success of agriculture, both in Europe and America, than perhaps all others combined. Every superphosphate manufactory in the civilized world stands as monuments to his memory, and the capital invested in them do perpetual homage to his genius.

In this connection, we can but notice how much is being saved annually by the cotton planters of the South from the recent improvements in agricultural science, based upon this great discovery of Liebig's.

At our experimental station, it has been established, that on the worn soils of Middle Georgia, (Eozoic formation,) the application of five dollars worth of nitrogen and phosphoric acid, in available forms, will increase the production of cotton one hundred per cent. for three years over the natural soil, without a re-application, thus saving half the labor in the cultivation of this great staple. It is the application of such scientific truths to the soils of Georgia that enables her to compete successfully with the rich lands of the West in the production of cotton, and has placed her the highest, by odds, of all the States in the purchase and use of fertilizers.

When it is remembered that agriculture is the basis of all human society, the sustenance of all human life; that without it the trade of the artisan, the navigator, the manufacturer and every other profession and calling in life would utterly fail; that twelve hundred millions of human beings depend upon it for their daily sustenance; that nine-tenths of the fixed capital of all civil-

ized people is embarked in it, and more than two hundred millions of men are daily laboring with brain and muscle in its interests, is it not wonderful that the learned and the great have been so slow to acknowledge its importance, and to provide means for the development of its truths, while millions are expended in other and less important systems of education, many of which result in as little real benefit to mankind as the struggle of the alchymists for the philosopher's stone?

Thus we have consumed the time allotted us in the presentation of our views on this important subject, and must close hoping that they may elicit from others a candid hearing, especially from those who, having pursued a different policy, have utterly failed of success. We feel safe in announcing to-day that these principles are working successfully, at least in one of the institutions of the country, and we doubt not will accomplish the same result in every instance, with men to enforce them who are equal to the emergency, and "in whose vocabulary there is no such word as fail."

Humus in the Soil.

We have ever urged upon the farmer, that whatever other fertilizers he determines to use upon his land, he should in no wise neglect to secure all that is possible from the resources of his own farm, to act in connection with the mineral manures which he may apply thereto; the union of the two kinds, the organic and inorganic, tending to secure far better results than can be reached by either singly applied. The following article from an able correspondent, on this subject, which we copy from the Massachusetts *Ploughman*, commends itself to the attention of any reflective mind, as containing sound doctrines upon the subject on which it treats:

At one time, the importance of humus in the soil was exaggerated. It was thought to be the essential food for plants, and its supply was a prominent object in farming. But the demonstrations of Liebig and others made it evident that plants could be made to thrive and grow to perfection when wholly deprived of the hitherto deemed all-essential element. Plants have been repeatedly and successfully cultivated in soil containing no humus or organic remains, supplied only with the mineral elements of plant-food; and it may be considered as an established fact that humus is not an indispensable agent in the successful cultivation of the soil.

But does the conclusion necessarily follow that humus or organic matter is consequently useless? Some seem to be inclined to this inference practically. The new methods of raising crops by the application of mineral fertilizers seem likely to lessen still further the popular estimate of the utility of organic matters in its soil. Chemical examinations have shown that the essential mineral elements of a cord of stable manure amount to only a small part of the whole bulk, and can be purchased for a small sum. Yet no practical farmers pretend to say that such a small amount of mineral fertilizers can equal in value a cord of barn manure.

What, then, makes the difference in the computed value of barn-yard manure, estimated according to its mineral elements, and its actual value as found by application? It is in the humus or organic matter which it contains, and the importance of which to the soil is at the time in danger of being overlooked. A cord of manure represents a greater value than its analysis indicates. What causes the difference in the result? It is generally conceded that humus or organic matter does not nourish plants, or, at best, is not essential to their growth, and it is a pertinent question to inquire what is its value? That it has a value is evident from its presence in large amount in barn-yard manure, producing a greater effect than the other known constituents of the same would produce without it.

In this connection arises the whole question, what is the effect of humus upon the soil generally? It is undoubtedly true that plants can flourish without the presence of this substance in the soil, provided there is abundance of mineral plant-food present in a soluble condition. It is the decay of humus or organic matters in the soil that exerts a beneficial effect, Carbonic acid is produced in considerable quantities, and this exerts a solvent action upon the hitherto insoluble mineral elements of plant-food, and prepares them to nourish the crops. All soils contain large quantities of mineral elements in an insoluble condition, and all that is needed to make such soils fertile is to render a sufficient quantity of these soluble for the use of these plants. When barn manure, muck, or other substances, composed largely of organic matters, are applied to the soil, decomposition commences, and carbonic acid gas is formed and dissolves in the water of the soil, and exerts its great solvent powers upon potassa, phosphoric acid and nitrogen contained in the soil. In this way humus contributes to the fertility of the soil, though not directly to the plant itself.

Now, although abundant crops can be raised without the employment of humus, yet it appears that its use is advisable from an economic view. Its presence in stable manures in large amount, will probably ever give these the preference for use upon the land by practical farmers. For the same reason, greater attention should be attracted to our muck beds scattered all over the country in abundance. I believe that by the combined use of mineral fertilizers as of late recommended, composted with muck, an almost unlimited amount of valuable farm manures may be produced. If the value of the essential mineral elements of a cord of manure is only a small amount, the rest of the bulk being water and organic matters, why not add to each cord of muck a like quantity of mineral fertilizers and make all the manure that is needed on all our farms at an unprecedented cost per cord?

A new era, I believe, is dawning upon American agriculture, and if present opportunities are rightly improved, immense advances may be made, in the right direction, and farming be made one of the surest, most remunerative, and most agreeable of occupations for the large majority of intelligent and enterprising men.

MANURES.

The following is a report made by J. J. H. Gregory, the well-known seedsman, to the Essex Agricultural Society, and contained in the Agricultural Report of Massachusetts for 1875–6:

There is an idea, very generally prevalent in the community, that, though other substitutes may do for an emergency, yet to keep up the fertility of the farm through a long series of years, barn-yard manure, by which is specially meant that of horses and neat-stock, is, after all, the only reliance. I believe this idea can be shown to belong to the popular class of errors, though countenanced very generally by the agricultural press, and by the agricultural writer of the popular type. To demonstrate that the agriculture of the farmers of an entire community is carried on, and that most successfully, too, with but little dependence on the manures of the barn-yard as a fertilizer, I will instance the practice of farmers of Marblehead, extending over a period of more than twenty years. Their crops are mostly early potatoes, cabbages, squashes and onions, vegetables which require the very highest feeding to give first-class crops; and these enterprising tillers of the soil are well known to fame as a class who are contented with nothing less than first-class crops, and when they fail in growing these the cases are exceptional. As a body, beyond one or perhaps two cows for family use, they keep almost no stock in addition to that needed to carry on the work of the farm. These consist of from two to four horses, or in the place of two of the horses, a yoke of oxen. From such resources it will be seen that they can average but about half a dozen cords of home-made barn-manure annually. Of barn-yard manure from other sources, some of them on an average purchase three to four cords a year, while half of them do not purchase any at all. Now these farmers will average as many as five acres each in vegetable crops, and their average application of manure is certainly as high as from eight to ten cords to the acre.

It will be seen, then, that while the average use of barn-yard manure is less than ten cords each by the farmers of Marblehead, the average quantity of manure used by them is forty cords or more. We find here, then, a community which, in refutation of the old axiom, that barn-yard manure lies at the basis of successful agriculture, have for twenty years kept their soil in the highest state of fertility with but little dependence upon it, while they are known by their crops far and wide as successful farmers. How they have accomplished this, what plant-food they use as a substitute, and how they prepare it for the soil, does not come within the sphere of my article, and I will therefore pass on to give a single illustration from my own experience of how a large crop of cabbages were successfully raised without any help from barn-yard manure.

In the spring of 1874, I broke up in an old pasture, wherever I could find sufficient depth of soil among the ledges, about three acres of rough hill-top and sides. As the road up the hill was very steep, making the teaming of common compost a very difficult matter, while six hundred cords on various fields of tillage had about exhausted all resources in that direction, I was more than half compelled to use concentrated fertilizers as a substitute. I chose hen manure, ground bone, and German potash salts. The hen-manure was collected in town at a dollar a barrel, the bone was a part of about thirty tons of bones that had laid together until about rotten, and were then ground in a bark mill.

These I purchased at from $20 to 25 per ton. They had been offered in neighboring towns in large or small lots, and yet there were found but two purchasers sufficiently intelligent or enterprising to invest in them at this low figure! Dr. Loring was one of these; the name of the other gentleman I have forgotten. The condition of the bones was so coarse, that probably the word crushed would best define it. The potash salts used were of the cheapest variety, known by the name of kainite, which contained but a minimum of potash to a maximum of chloride of sodium, or common salt; a subsequent analysis proving that the composition as given was incorrect, the proportion of potash present being not nearly so great as the original analysis set forth. Thanks to our Agricultural College, this deception was duly detected and duly exposed, so that the public is not so likely again to pay for a good article and get a poor one. In these three articles were the three substances which make up about all that vegetation needs, viz: nitrogen, phosphate of lime and potash. The hen-manure and bone were each rich in nitrogen and phosphates, while the kainite gave the potash. The hen-manure was especially rich in nitrogen and the bone in phosphates. To manure the three acres I used twenty-five barrels of hen-manure, twelve barrels of bone and three of kainite. These were composted with about an equal quantity of fine loam—a square heap being made by spreading layer on layer of each to a height of about three feet. The mass was allowed to remain for three days, until well heated by fermentation, when it was pitched over and very thoroughly mixed together and allowed to stand about twenty-four hours longer, when heat having again been developed, it was again pitched over, and the process was a third time repeated. The entire mass had now become very thoroughly mixed together, and was mechanically in very fine condition. The ground having been thoroughly prepared, about a quart of this compost was applied to each hill, covered with soil, and the seed planted upon it. The result showed that the kainite was too strong of common salt, for but few of the seed vegetated. The trouble could not have arisen from the hen-manure being too concentrated, for I have often used it as strong, and even stronger, and yet had no difficulty in getting healthy plants. The result was, we were compelled to transplant into many vacant hills. The crop received the usual cultivation, and, though a part of the growing season was very dry, and this crop was on a high, steep hill, yet ultimately I had one of the finest crops of Essex, Wakefield, Winegstadt, Wyman and Schweinfurt Quintal cabbages it was ever my fortune to raise; indeed of the Schweinfurt, I think of the many years I have raised them, I never had so fine a crop.

The cost of the manure was as follows:

Twenty-five brls. of hen-manure, at $1 ₽ brl.....	$25.00
Twelve brls. of bone, 180 pounds each, at $22 ₽ ton.....	24.30
Kainite, about.....	12.00
Expense of composting.....	5.00
Cost of teaming manure.....	5.00
Total.....	$71.30

It will be seen that the cost of the manure on the ground, and mixed, was about $24 for each acre of cabbage. Any farmer of experience knows that, as a rule, to insure a first-rate crop of these varieties of cabbage, at least six cords of good stable-manure to the acre would be required; and as every farmer of experience also knows, such manure, landed in the field, costs on the average $10 to the cord, which would make the cost for each acre of cabbages, $60, on the side of barn-yard manure, and for the three acres, $180, against $71 30 on the side of the mixture.

But the common farmer may say that the six cords will leave residue in the ground which the grass-crop will find when the land is laid down. True; but so will the mixture leave considerable of phosphate of lime, potash and salt behind it. But raising cabbages on such a scale belongs to market-farming rather than to common farming, and those who follow it only at long intervals, lay land down (grass is the poorest return they get,) and meanwhile for many years every acre receives just about as much manure one year as another, but little or no account being taken of what might be left in the soil by the preceding crop.

German Millet and Forage Corn.

Dr. Thos. P. Janes, the commissioner of agriculture of Georgia, in his report for the month of June, issued July 15, says of these forage crops:

Fine crops of German Millet and Forage Corn have been made, and are now quite nearly ready for harvesting. The proper stage at which to cut these crops is a question of great importance. The blade of the German Millet is very rough, and becomes more harsh as the plant approaches maturity: hence only enough to afford an abundant supply of seed should be allowed to ripen. That intended for forage should be cut when the seed are fully in the *milk stage*. The plant at this stage has its maximum amount of nutriment in the stem and leaves, prepared for the formation of seed. If cut then, the hay, when cured, will be more nutritious than at any previous or subsequent period of its growth. There have been complaints, at the North, of injury to *horses* from feeding German Millet, perhaps in excess, which should at least put farmers on their guard until the matter is thoroughly tested. There have been no complaints of injury to cattle or mules. The ripe seed have been said to produce founder in the horse. These suggestions are thrown out, in the absence of positive information, to caution farmers against excessive use of the Millet in feeding horses until its effects are better ascertained.

Corn Forage is, perhaps, the cheapest provender which the farmer can raise, the only difficulty being in properly curing the crop after it is made. This is greatly reduced by very thick planting. The soil should be made very rich, and not less than *eight bushels* of seed sown to the acre, in order to reduce the size of the stalk. It should be cut as soon as *fully in tassel*, the stalk being then sweeter than at any other stage of its growth. Large areas should not be planted at one time, but successive plantings made, so that the whole crop will not need harvesting at the same time.

The most successful method of curing is as follows: Cut and spread as uniformly as possible over the ground; as soon as the blades on the upper side are cured, turn and allow time for the balance of the blades to cure; next set it up against poles fastened on stakes or forks, leaning the corn from each side, leaving an open space under the poles to admit of a free circulation of air. The poles should be from three to five feet from the ground, according to the length of the corn. After the stalks are cured, the whole should be securely housed, but not in large bulk until all danger of heating is passed.

Packing Wool.

Mr. Stewart, in his *Shepherds' Manual*, lately noticed in our pages, gives the following mode of doing this and shows the advantage in doing it well:

The manner in which the fleeces are made up has no little influence upon the price at which the wool will sell. Wool buyers prefer to have the fleece loose, light to handle, and elastic, and tied up so that it can be easily opened, if need be. The method of packing in Ohio and western Pennsylvania is to lay the fleece upon the table, turn in the head and tail, then the flanks, and roll it up in a neat roll, tying it with a string at each end. Sometimes the fleece is tied with one more string across the ends, but this is rarely necessary, excepting when the wool is very short. A fleece thus tied is light, easily handled, shows the quality of the wool, and can be felt all through. The effect of the manner of putting up the fleece is seen in the following quotations, taken from the wool market report of Coates Bros., Philadelphia, July 1st, 1875: Ohio, Pennsylvania and West Virginia fleece, 50@52 cts.; New York, Michigan, Wisconsin fleece, XX, 46@48 cts.; Illinois, Iowa and Missouri fleece, XX, 45@47 cts. The difference of four to five cents per pound is the value of the extra care in making up the fleeces. The difference is even greater than this, for New York, Michigan and Wisconsin wools, of better quality than some Ohio wools, are bought at the regular rates quoted, simply because the Ohio fleeces come to market in better shape. This is no unreasonable distinction, as will be seen when the manner of sorting wool is explained further on.

Nothing should be tied up in the fleece, nor should coarse twine nor too much twine be used. All tags and waste wool should be scrupulously kept out of the fleece, as it should not only look good, but should be good. This observing of little things is one of the ways in which wool growing is made a profitable business. Tag locks and dirty wool should be washed in a tub with soft soap and cold water, and sold by itself.

When the grower ships his wool to a distant market, he necessarily packs the fleeces in bales. The bale should be solidly packed, both for economy in freight, which in light bulky articles is charged according to bulk and not by weight, and for the better condition of the fleeces on their arrival at their destination. A convenient method of baling the fleeces is to hang the sack from a trap-door in the wool loft. The fleeces are handed or thrown to the packer, who places them in the sack, pressing them down close with his bare feet, and, as he reaches the top, with his knees; a handful of tags is put in each corner of the sack, and tied tightly to make a handle, by which the package can be hauled about in its transportation to market. When filled, the bale should be plainly marked with exact weight, tare and net weight, upon one of its sides.

Live Stock.

Garget in Cows—Hollow-Horn.

Messrs. Editors American Farmer:

In this month's number of your valuable paper I observe an excellent article on "Garget in Cows," which suggests my own experience with one of the dairyman's difficulties; and if you consider it worth anything to your readers, they are welcome to it.

Garget generally exhibits inflammation of one or more lobes of the udder—seldom more than one at a time. "The causes may be both local and constitutional." It is a disease that all cows are liable to, but its pathology, like many other diseases, we do not fully understand. It sometimes exhibits merely a partial coagulation of the milk, without any apparent inflammation of the udder, and subsides in a short time without difficulty, if care be taken to free the udder from clot. There are some cows which have violent inflammation with the clot, and require medication before relief is obtained.

It seems to me the disease is a coagulation, in a greater or less degree, of the casein of the milk, the cause of which *may* be various; but as far as my experience goes, I do not think it as dependent on the food as the peculiarity of constitution with particular cows. I observe, after years experience, that cows which give poor or the average quality of milk are more subject to garget than cows which give rich or very rich milk. With several of my native cows I have had a great deal of trouble with garget; one, a very fine milker, I had to beef, owing to its frequent and violent returns.

With my grade (half) Jerseys, I have had but one that showed the disease further than at long intervals—some clotting of the milk, which made but little difficulty.

With my thorough-bred Jerseys, which give exceedingly rich as well as a large flow of milk, I might almost say I have had no difficulty with garget. This inclines me to conclude that the disease is an undue proportion of casein to the oleaginous properties of the milk. This is as far as we need discuss garget pathologically. It might be well to give some remedies.

When there is only a little clotting of the milk careful emptying of the udder may be sufficient, with a teaspoonful of nitrate of potash or chlorate of potash twice a day. If there be inflammation, and one or more lobes of the udder swollen and hard, make an ointment of lime water and oil in equal proportions; when well mixed, to a half pint add one or two table spoonsful of spirits of camphor, and anoint the affected part thoroughly twice a day, being careful to empty the udder as much as possible. If this does not give relief give two teaspoons of chlorate of potash from three to five times a day in conjunction with the anointing. Iodine ointment is also good.

I see in your June number, page 186, "The Dairy," what I think is an error (if you will have the charity to allow me to say so) in the second paragraph, last period, which I hope to notice when the weather gets cooler and the nights longer. The "hollow-horn" is only a symptom of the true disease. "Hollow-horn" and hollow stomach are not synonymous, as many suppose them to be. The disease is properly congestion of blood in the brain, and the "hollow-horn" is only *one* of the symptoms.

It is a disease which cattle are constitutionally liable to, and from my experience I am satisfied that a large proportion of cattle (say nine-tenths) which perish with us is due to this disease.

WM. J. SCHOFIELD.

Sandy Spring, Md., July, 1876.

Grade Jerseys for Farmers.

Mr. Thomas Fitch, New London, Conn., writes as follows in the *American Agriculturist:* "My experience for many years in breeding Jersey stock and crossing thoroughbreds with other breeds, may interest some of your readers, particularly the dairymen with whom butter-making is the principal business. My first purchase of Jerseys was made from the importation and breeding of the late John A. Taintor, of Hartford, Conn., who was, I think, the first to visit the islands in the British Channel, and to select in person and import into this State a herd of Jerseys. He was remarkably fortunate in his selections; for few if any of the latter importations, down to the present time, have equalled or even approached the quality of his stock, for form, beauty, or the production of milk, cream and butter. Solid colors and black points, squirrel grays or silver grays, light fawns or dark fawns, or other fashionable marks or colors, had then as little to do with the real value of a Jersey cow as they have to-day, or as the dark and light complexion has to do with an Anglo-Saxon's brains. A good Jersey cow, thoroughbred and well bred at that, one that gave twelve quarts of milk per day on common food (not steamed) and made twelve pounds of butter per week, sold then for about one hundred dollars.

I have bred many thoroughbred Jerseys, and hundreds of grades, but comparatively few of my thoroughbreds have given more than twelve quarts of milk per day, and I have the credit of breeding some of the most celebrated milkers and butter-makers now in this country, among them the following well-known names: Palestine third, Maggie Mitchell, Fleetfoot,

Flora, Buff, and more that I can name, all are direct descendants of Mr. John A. Taintor's stock, some of them having given as high as twenty-two quarts of milk, and made more than two pounds of butter per day, measured and weighed. I have crossed the Jersey bull with nearly all the known breeds of cows, Ayrshires, Natives, Short-horns, Dutch, the "sacred cow," and the Devons, and it is an excellent cross with any and all breeds for the dairy. I have never yet found a half-blood Jersey cow that did not yield a richer quality of milk than her dam. One peculiarity of the cross is this: Wherever the Jersey bull serves, he transmits the rich quality of the milk to the grade he gets.

The thoroughbred Jersey cows, as a rule, have small teats and udders, small bodies, and tender, delicate constitutions; they are not so hardy or so easily kept as Ayrshires or Natives, but the grades have good-sized teats and capacious udders; are hardy, easily kept, and the quantity of the milk is increased. The grade is, in fact, worth more money to the farmer than the pure Jersey, for actual production and all purposes except breeding thoroughbreds. The great value of Jersey stock to the country is for dairymen, especially butter-makers, who by crossing thoroughbred bulls upon their common cows of all the mixed bloods, can select the heifer calves from their best milkers, and raise them to take the place of the present cows, and then again cross the pure bull with the half-bloods. When these herds are three-quarter Jersey, their yield of butter will doubtless be one-third more in quantity, of a much better quality in color, firmness, and flavor, and worth fifty per cent. more than at present. Who can estimate in dollars and cents what may be gained in the next few years by the farmers following this course, with a slight outlay of money in thoroughbred Jersey bulls?

Live Stock at the Centennial.

The following are among the rules laid down for the guidance of judges on live stock:

Awards shall be based on written reports, attested by the signatures of their authors.

Reports will be based upon inherent and comparative merit, the elements of merit being specifically mentioned.

The judges assigned to each group will choose from among themselves a chairman and a secretary. They must keep regular minutes of their proceedings. Reports recommending awards shall be made and signed by a judge in each group, stating the grounds of the proposed award, and such reports shall be accepted, and the acceptance signed by a majority of the judges in such group.

Awards will be finally decreed by the United States Centennial Commission, in compliance with the Act of Congress of June 1, 1872, and will consist of a special report of the judges on the subject of the award, together with a diploma, and a uniform bronze medal.

In addition to reports on the merits of individual exhibits, the judges of each group will be expected to render a report general in its nature, summarizing the exhibition in their group, and indicating the recent progress noted in breeding, rearing or training.

The Breeding and Management of Berkshires.

In our last we gave a liberal quotation from the premium essay of Mr. Allen on Berkshire Swine, and we now extract from the same the following interesting and useful suggestions:

Selection of Stock, Breeding and Rearing.

The Boar.—As a single male is used to many females, and is generally admitted to be the most prepotent of the two sexes in giving character to their stock, it is very important in selecting the boar, to obtain one as perfect as possible. For the points governing such, I need only refer to what has been heretofore described under the head of "Characteristics of the Best of the Improved Berkshire Swine." I will simply add this, that if we are to choose between over refinement and a strong masculine expression in the boar, we must accept the latter in preference to the former, even at the expense of a little coarseness.

Pen and Pasture Accommodations of the Breeding Stock.

Treatment of the Boar during Service.—During cold weather he should have a tight, high-roofed, roomy pen, with good ventilation and a plank floor, kept clean and well littered, to feed and sleep in. Let as large a yard as convenient and of a dry soil adjoining, for rooting and exercise, communicate by a door through which he can pass out and in at pleasure. If this be hung by the centre of each side, he can open it by putting his snout lightly against it, and then after passing, it shuts of itself. Plant one or two upright posts of rough surface in the yard for him to rub and scratch himself against. During warm weather let him be turned into a well-shaded grass or clover pasture, with running water or ample slough to wallow in. This would enable him to recruit well from the services and confinement of the preceding months, and make him useful for a greater number of years. While there at rest, he should not be so high fed as when in service; at the same time he should not be suffered to get too thin in flesh, but be kept in fair condition. While here no other swine ought to be in sight or hearing, otherwise he would be constantly roaming and fretting about the pasture, instead of remaining quiet, as is necessary in order to fully recruit.

Feed.—This may be varied according to place and circumstances. Let a due quautity be given at fixed hours, as nearly as possible, morning, noon and night. See that he has no more than he eats up clean. After feeding give all the pure, fresh water that he will drink, taking care in winter that it is not too cold, otherwise indigestion or colic might follow.

When the boar is much used, I have found the best general food to be ground corn and oats, mixed half and half. Add to this from a pint to a quart of oil or cotton-seed meal, and a teaspoonful or two of salt to every peck of the mixture, and then wet up with water. If cooked or suffered to ferment before feeding, so much the better. Confined to his pen, give him a few roots daily—sugar beet is the best—or a little fresh cut grass or clover according to the season; but not enough of either of these to make him

scour or even dung loose. Chunks of decayed wood and charcoal should be constantly in his yard to gnaw at pleasure. For want of these, a bushel or two of anthracite or bituminous coal ashes can be substituted to root over. Half a gill of wood ashes may be put into his feed once a week, or a tablespoonful of sulphur once a fortnight. A pint of pure crushed bones now and then, is a good thing to throw on the floor to be picked up as relished. If he gets a little costive, change his food two or three times to a warm bran mash or shorts, or throw a clod of fresh clay into the yard for him to munch at. When in pasture the decayed wood, charcoal, etc., may be omitted. Treated as above, I have never known my boars become ill.

Service.—Unless a finer-boned and smaller sized stock is wanted than the present parents, the boar should not be permitted to serve sows before six months old, and it would be better if he were kept back till nine months old, and then only used sparingly till he has attained the age of twelve months. After this he may be used more liberally, and at eighteen months may be considered in full vigor. The number of females a boar can effectually serve per annum, and insure strong healthy offspring, may be from 30 to 70, or even 100, dependent entirely on his constitution, feed, general treatment, and whether he covers each sow only once or oftener. If it exceeds the latter number, it might endanger the vigor of his stock. One coition is as good usually as more, and produces as numerous and strong offspring. But I once had a sow that not even half a dozen coverings of the same boar would make pregnant; and to assure this, had to let in several, one immediately after the other, to serve her, till she was so tired as to lie down and permit no further intercourse. She was then separated from all contact with males, and in due time gave birth to a fine vigorous litter of pigs; and of as much uniformity in appearance as the general run of the breed.

The Sow.—For the points governing the best, refer to "Characteristics of the Best."

Treatment.—Do not introduce her to the boar just after eating heartily; defer it till between meals, when her food is at least partly digested. Nor do so when she is hot or tired, or has been worried by driving to the boar—wait till she gets cool and well rested. Immediately after service separate her from the boar, and keep her quiet an hour or two before exercising or driving, and let the latter be only a moderate distance.

Best Age to first Breed.—Unless extra coarse and large, and it is desired to make her finer in all her points, the sow should not be put to boar till eight months old, so as not to farrow till one year old. After this she may be regularly bred every six months, unless one desires to increase the size of the stock, then it would be best not to let her breed oftener than once a year, and have the pigs dropped in the spring at the North, or earlier in the year at the South, according to the climate. If the winter be long and cold where the pigs are bred, they will be of little account to reserve for breeders if dropped in autumn. The pig is indigenous to a hot, or at least temperate climate, and if farrowed in autumn in a very cold one, is apt to get stunted, and makes little growth during the following winter. Such will answer better for fattening than breeding.

When Pregnant.—If of large size, not more than two sows should be kept together in the same pen, and these must be peaceable; if smaller, several may, according to size; but in no case would I permit over half a dozen, even in an extra roomy pen, as they are apt to crowd on to each other to their great injury and sometimes death, especially in cold weather. In a large wood lot or pasture, any reasonable number may herd together in warm weather; but as soon as the nights get cold, there is the same liability of their overlying each other here as in the pen. Strange sows should not be changed to run with each other when pregnant, for Berkshires are high-spirited, and they will often fight so hard under such circumstances as to receive much injury, or cause them to cast their pigs. One month at least before ready to farrow, each sow should be put in a comfortable pen by herself as described for the boar, and a few days in advance of pigging, be littered with short cut straw, as long straw is apt to entangle the young, till they get some strength. At the same time, if not done before, a smooth piece of joist with the front corners champered off, or a smooth half-round pole, four to five inches thick, should be spiked on to the sides of the pen all around, four to six inches high from the floor, according to the size of the expected pigs, so as to enable them to escape under this from being overlaid by their dam, if they happen to be between her and the side of the pen when she lies down to give them suck. Sows ought to be watched when expected to bring forth, especially in cold weather. As soon as dropped, see that each pig is cleaned and takes the teat, and the dam rid of her placenta, which carry off immediately and bury. Some, however, prefer to let the placenta remain for her to eat if she choose, as this would lessen the risk of her devouring the pigs in case she had a morbid appetite. After being nursed two or three times, the pigs, if lively, will generally take care of themselves, and need little further attention, unless the weather happens to be quite cold; they may then require to be covered with the sow while nursing, or to be put into a box by themselves, covered over with a thick blanket, and placed near a fire, otherwise they might get chilled and perish; for a young pig is a very tender animal.

Feed.—Store sows, or when breeding, should not be fed so high as the boar when in service, for they do not require it. They must be kept in only moderate condition; for if too fat they often become barren; or if they breed under such circumstances, the pigs are apt to be small and feeble; or the dam is so heavy and clumsy in her movements that she is liable to overlie or tread on and wound or kill them. An excess of fat also inclines the sow to be feverish at this time, and lessens the quantity of milk for her offspring. The best feed I have found for pregnant sows in winter, is a reasonable allowance of wheat bran, or shorts, mixed up with hot water, or cooked; or roots, especially the sugar beet, boiled or steamed, and all slightly salted. To either of these messes add a pint to a quart

of oil or cotton-seed meal each day, according to the size of the animal. I often mixed the roots and bran together, half and half. If the sow is quite thin, this feed may be strengthened more or less, to get her into fair condition, with Indian, pea, bean, barley, or oat meal, or unbolted wheat, rye, or buckwheat flour, as either of these happen to be on hand, or are found best to agree with her. I have kept sows, inclined too much to fat, in good breeding condition all winter, on a moderate mess per day of raw sugar beets alone; and in summer on good clover or grass pasture. But occasionally a little bran or meal, or something else, in addition, may be required, particularly if the animals be large or rather long-bodied. For weeks in autumn I have also kept them in good breeding condition on pumpkins alone. Winter squash, however, is superior, as being more nutritious, and having a less quantity of seed.

After Farrowing.—Give the sow tepid water to drink, for the first day, and feed lightly without changing the food. When the pigs get to be a few days old, and especially if numerous, increase the feed daily, and make it richer with oat, pea, bean, barley, or Indian meal, and an additional quart per day of oil or cotton-seed meal. If there be milk or whey in the house to spare, add a moderate quantity of that. Judgment is required to properly feed a sow while nursing a large litter of pigs, to keep her up in good condition and her offspring rapidly thriving. To do this she must be closely watched, and the feed varied according to circumstances; for no strictly definite rules can be laid down regarding it. In a herd of twenty sows, no two, perhaps, can be fed and treated exactly alike during the time of gestation and nursing. Water her regularly, morning, noon and night; and as long as confined to the pen, give chunks of decayed wood, charcoal, etc., as prescribed for the boar.

Progress of Plum Culture.

Mr. M. B. Bateham writes the *Gardeners' Monthly* that if plum-tree planting goes on in other States as in Ohio, the markets will in a few years be abundantly supplied with plums in spite of the curculio. From the Horticultural Society's reports, it appears there were in 1874 probably about 50,000 trees in orchards in that State and there are probably 125,000 now, with indications that 30,000 more will be planted the coming spring. The varieties put out are the blue damson, the wild goose, the Chickasaw, and the Lombard. In orchards of the first three kinds it is not necessary to fight the curculio. The trees are naturally inclined to bear too full, and where there are many in bearing the insects do not seem to be sufficiently numerous to cause more of the fruit to drop than ought to come off.

It may be as the trees grow older the insects will increase so as to make jarring or other means of defence necessary. The Lombard and finer varieties are protected by jarring and the use of "catchers" on the well-known principle of Dr. Hull and others.

Mr. Meehan remarks that small growers cannot care for a few trees, but in large orchards it pays to keep a man with shaking machines to knock down the curculios.

Veterinary.

Bone Spavin.

From a paper by Mr. James McLaughlin on the above subject, which was read before the Montreal Veterinary Medical Association, we make the following extracts:

Bone spavin as a rule produces lameness, sooner or later. Although so few cases have come under my observation, where one or both hocks bore thoroughly developed spavins, and yet for a number of years showed no lameness therefrom, I cannot but maintain that when we have such direct interference with this most important and complicated joint, it will some day cause lameness; and whether the lameness attends its formation or subsequent growth, once bone is thrown out, the disease becomes established, and the animal is rendered unsound through life. The lameness attendant on this disease is very remarkable, and easily distinguished from any other. The animal, on starting, draws the limb up with a quick, sudden motion, and yet there is an evident dragging of the leg, indicative of pain, and a loss of action in the joint. As the horse proceeds on his journey, a perceptible reduction of the lameness ensues, and when quite a distance is travelled, it very often disappears entirely; but allow the animal to again rest, and on starting anew a recurrence of the lameness takes place. The departure of the lameness depends not only on the amount of exercise, but principally on the extent of growth in the spavin; if it be newly forming, the lameness may cease after a few miles have been travelled, but if it has acquired considerable growth, exercise will but slightly abate it. The degree of interfearence with the action of the joint by the bony deposit determines the extent of the lameness, which is further aggravated by the difficulty experienced by the periosteum, in accommodating itself to the bony growth beneath it

Veterinary practice in the treatment of this disease presents a wide field for differences of opinion to arise, and this difference is based solely on one fact. They all agree upon the necessity of reducing the inflammation as far as possible as a primitive step, also upon the advantage derived from elevating the calkings, whereby tension is removed from the joint, and further the ultimate and unavoidable application of counter-irritants to destroy the lameness; but in the latter they seem to disagree to a great extent. Individually each one claiming an advantage for his treatment over all others. Some deem repeated blisters as sufficient, and leave a comparatively slight blemish.

Others introduce a seton and thereby keep up an incessant counter-irritation, and from this also but little blemish accrues. Farmers and quacks can even at this day be found who resort to the application of acids, and their success is generally characterized by the destruction of the entire limb. But we find a number who most sensibly consider a still severer counter-irritant necessary, and with repeated success use the actual cautery, and I consider it a serious mistake on the part of those who try to discontinue

its use in this respect. What we wish to produce by counter-irritation in the spavin, is an increased effusion of lymph by exciting extreme inflammation, and as the effused lymph is quickly converted into bone, and a complete union of the joint effected, the sooner this is accomplished, the sooner is the lameness removed; and the celerity with which this result is attained by the use of the firing iron, compensates for the pain of the operation and resulting blemishes.

Staggers and Indigestion.

This disease is thus treated by the agricultural editor of the New York *Times*: It is known as "staggers," or congestion of the brain, resulting from indigestion and distension of the stomach and bowels. It is often called "stomach staggers," and frequently occurs when horses not subject to indigestion are overfed with grain or green food. The only proper treatment is to relieve the bowels by a purge of half an ounce of powdered aloes in warm water, or a pint of linseed oil, or an injection of warm soap and water with a handful of salt. Afterwards to feed the horses very cautiously, giving only the lightest and best food, viz: sound timothy hay, cut, moistened, and mixed with oats and rye ground together; half a tablespoonful of salt and a teaspoonful of ginger should be given in each feed. A drachm of sulphate of iron in each feed for a week would be of use. Care must also be taken to give water in small quantities, but often, and always to treat the horse so that the stomach may never be overloaded or overworked. If this is neglected there is danger that on some occasion a fatal attack may occur.

ADMINISTERING MEDICINE TO SHEEP.—Sheep medicines administered internally should be in a fluid form, for otherwise they fall into the rumen branch, where they do not produce much effect. Even fluids should be poured into the throat with care and deliberation, or they are likely to take the same course. It is common, as in the case of horses, to give sheep medicine through a horn. Some persons fasten their mouths open by means of a bit of three-quarter inch board, two and a half inches wide and four inches long, with an inch and a half hole through its centre, and a strap attached to each end. The piece of wood is placed in the mouth so as to hold it fully distended, and is confined there by tying the straps over the back of the head. By holding up the head of the sheep and inserting a horn or tube through the hole in the wood, fluid can be poured into the throat without difficulty. A probang can more conveniently be inserted through the same aperture in case of choking.—*Randall.*

LOSS OF CUD.—*The Live-Stock Journal*, in answer to an inquiry as to the cause of cows losing their cud, and how the disease is to be treated, says: The loss of the cud is not a disease, but rather a symptom of either an approaching disease or one already existing. When observed, give a solution of eight to twelve ounces of Glauber's salts in a quart of warm water, to which add an ounce of bruised caraway seed, or an ounce of ground ginger.

Correspondence.

Even Distribution of Fertilizers.

Messrs. Editors American Farmer:

Your readers are under obligations through you to your correspondent L. H. McGinnis, for his exhaustive and practical article: "The True Theory of Farming, No. XI," in your number of July. It would require more space than we intend to occupy, to comment on all the points contained in this article. We will only call the attention of your readers to one, viz: "The Even Distribution of Fertilizers." This is a point of the very greatest importance, not sufficiently appreciated by our farmers in general. The reasons why are given fully by Mr. McGinnis, and we only desire to add, that as far back as 40 years, the vitality of this point was understood by farmers of those days in the old country. We had occasion to remain one year on one of the large estates of the Duke of A——, in the year 1839, for the purpose of learning bookkeeping and the general management of a large estate, after having served three years on another smaller estate to learn the practical work of farming, by doing all kind of manual labor executed on a farm.

In those days, one year's fallow was practised in the rotation, and at the last ploughing in September, all the manure, gathered through the year, was applied for the coming crop, "rape." The Duke never visited the estate except once a year, and that was when he was informed that the manure had been spread for ploughing under. He then would come and ride over his field, most minutely inspecting the spreading of the manure. After spreading, his field would be harrowed, and then gone over to break such lumps which had failed to pulverize, and I may say, without exaggeration, that on a field of 200 acres, there could not be found a lump larger than a hickory nut. In all other matters, the Duke had implicit confidence in his manager; but in this one case, he wanted to be convinced by seeing himself.

Let us commend most earnestly to your readers these words of Mr. McGinnis:

"When farmers begin to talk about how much lime and other fertilizers they apply per FOOT, farming will be on better footing."

Bay St. Louis, Miss. L. A. HANSEN.

ROADS.

Messrs. Editors American Farmer:

Roads to the country are what pavements are to towns and cities. How soon a noise is raised when there is a bad place in the street or pavement! Now if any one has a right to complain of bad roads, it is the man who devotes his time and means to farming. The growth of good crops certainly adds to the wealth of the country; but if the roads the farmer has to transport the products of his land over are such that he cannot carry more than a half or two-thirds of a load, his property is in a state of depreciation in the same ratio. If there were only a few isolated cases of the kind, it would not be so serious

an affair. But there are many such cases in the various localities. While we are all free and equal in many things, why might we not be so in the matter of good roads; good roads should be for the benefit of all, like knowledge and religion. It is a good maxim that all should have good roads from the centre to the circumference. Necessity, as well as pleasure, compels persons to go to and from cities and to the country. Why, then, should not the people, one and all, have good roads? Some complain that there is too great a tendency to concentration to the cities and towns. With good roads, might not many living in the cities be induced to have their dwellings in the country, where there is pure air and room to turn around in? Many articles might be taken to market which would make a more plentiful supply, were there good roads. In a religious point of view, have good roads for the people to go to church. Well, I don't believe any one is really opposed to good roads; but in the first place they should be judiciously laid out, and constructed according to the rules of engineering. Next they should be kept in proper order; and there is the rub. How few there are who have the right ideas of mending and draining of the surplus water from the road. The roads should be higher in the middle; thereby making them dry and solid. You have not space to do justice to the subject. Let the people see to it that there be good roads. The country is able to have them. There would be better times, more wealth, more ease and pleasure, and a stronger bond to bind the towns and country together.

RUSTIC.

New Subscribers for the American Farmer—Agricultural Clubs.

Editors American Farmer:

I have the pleasure of sending you a list of ten names as new subscribers to the *American Farmer*. The prospect is very good of soon sending you another list of eight or ten more names as subscribers. There is quite a spirit springing up among our Jasper county farmers to establish a "Farmers' Club," which, I hope, will be successful. I think quite a lively interest will be taken in the effort to accomplish the desired object. I shall endeavor to make a good thing out of it in the interest of your valuable paper, the old *American Farmer*. Could you not send me a form, a set of rules and regulations by which to start our farmers' club and get it up in running order. I propose to have it on the style of Gunpowder (Baltimore Co.) Agricultural Club. If you can do so without any trouble it will be quite a favor.

R. JORDAN.

Jasper Co., Ga., July 2, 1876.

[This request was referred by us to the secretary of the Gunpowder Club, who has kindly furnished us the following reply, giving the information desired.—*Ed. A. F.*]

Messrs. Editors American Farmer:

Your letter of 11th inst., enclosing one from Mr. Jordan, has been read, and I take great pleasure in replying:

The constitution of the Gunpowder Agricultural Club is almost verbatim the same as that of the Montgomery County Farmers' Club, after which it was modeled.

The number of members is limited to fifteen. The average attendance would be probably about thirteen—a very convenient number; and if there could be a surety of every member being in his place at the meetings, no more would be desirable. Fifteen, however, gives a very appropriate variety in the recurrence of the meetings, throwing them thus two months later each year at each farm.

The officers consist of a secretary, treasurer, and executive committee. The body is presided over by a foreman, who was formerly chosen at each meeting; but now the members take turns in performing this duty, and alternate as their names stand on the roll.

The duties of the secretary and treasurer are the usual ones for such officers.

The executive committee selects questions for discussion, which are announced one month in advance. This committee is likewise a committee *in esse* for the transaction of such club business as may occur in the interval of the meetings, and require immediate attention.

These officers are all chosen by ballot, without nomination, at the annual meeting in January.

Before giving the programme of proceedings at each meeting, it may add clearness to state that our regulations call for no quorum; that no fines are imposed for absence, nor delinquency of any sort; that, indeed, obligatory restrictions, such as associated bodies usually attach to non-performance of duties, are discarded.

With us, members are seldom absent, except on account of sickness; and the duties assigned to different members are generally attended to with promptness and punctuality.

PROGRAMME.

Foreman calls to order at 3 o'clock.
Reading of the minutes.
Appointment of the committee of inspection.
Club breaks up for inspection.
After the round of inspection, foreman calls to order.
Minutes of last meeting are read.
Unfinished business.
New business.
Half hour for promiscuous questions and answers.
Discussion of the subject selected for the occasion.

[NOTE.—Supper usually intervenes after the return from the round of inspection.]

This programme calls for some few words of explanation.

The first, "Reading of the minutes," refers to the reading of the minutes of the meeting held at the previous round, which are read by way of refreshing the memory, especially in regard to criticisms.

The "inspection committee" is composed of three. It is their business to notice carefully whatever may come under their observation in the farm-management of the member visited worthy of approval or deserving condemnation. No negligence is palliated, nor is just censure withheld.

The half hour for promiscuous questions and answers is intended for drawing out information

concerning small matters of detail. This is an indispensable feature, adding very much to the interest and profit of the meeting

Three meetings in the year (Jan., May, Sept) are set apart for reading articles on agricultural subjects and generally selected from agricultural periodicals. These meetings are often interesting and could always be so if the selections were studied beforehand with reference to thorough comment.

The April meeting is devoted to crop reports which are requested to be written, and should be complete and exhaustive in regard to all the products of the farm.

The remainder of the meetings is occupied with the discussion of subjects pertaining to general agriculture, chosen as much as possible to meet the requirements of the season at which the discussion takes place.

So far as suggestions are concerned, I believe I have none to offer. Our organization works very smoothly, and we see no occasion to alter or amend our rules and regulations as they now stand. Respectfully yours, &c.

Balto. Co., July 17, '76. THOS. GORSUCH.

CONSTITUTION OF THE G. A. CLUB.

We agree to meet at 3 o'clock P. M. each Saturday preceding each full moon.

When assembled we shall proceed to inspect the crops, stock, farm implements and contrivances and inquire into the modes of culture and general system of management pursued by the member at whose house we may be.

A free interchange of ideas upon agricultural subjects will be expected on the part of all, and if any member is making experiments which are likely to be useful or interesting, we shall take special care to notice their progress and results.

It shall be both the privilege and duty of each member to criticise freely the arrangements that may come under his observation and to propose any question or questions which he may wish to have answered, and if he request it the opinion of each member may be called for upon the subject.

The number of regular members shall be fifteen, but it shall be the privilege of each member to invite any of his friends he may wish to meet the club at his house. Unanimous consent is required for the admission of a new member.

At the annual meeting in January, a secretary shall be chosen to serve for one year, or until a successor shall be appointed. It shall be the duty of the secretary to keep a book in which the minutes of the meetings and the questions and answers shall be recorded, said book to remain in the keeping of the secretary, but open to the inspection of any member of the club who may wish to see it.

Each member shall be expected to pay monthly to the treasurer the sum of 25 cents, to constitute a fund for the purchase of standard agricultural works, or periodicals, as the club may direct.

As punctuality is necessary to the success of every enterprise, we pledge ourselves to suffer only sickness or some like unavoidable cause to prevent our regular attendance at the meetings of the club.

"By Industry We Thrive."

Editors American Farmer:

What a good thing regularity is! As usual, the *Farmer* is at hand, and is up to the times. The information is important on many topics. We can see what our fellow-farmers are doing. The account of the harvest is cheering, as we see in the papers. We hope the corn crop will prove as productive as the wheat did. Should this be a productive year, it will be remembered in connection with the centennial. Having a little upwards of a year recommenced farming, I am glad to say that my success has come up to my fondest expectations. I am certain I have been assisted by attentive perusals of the *Farmer*.

It won't do to cling to old ideas and old practices. Changes are necessary to keep pace with the advance in agricultural science and new modes of cultivation. The implements of many years ago are superseded by new inventions and improvements The failure in a great measure in clover for some years past has forced us to try new means of obtaining its growth, or discovering something that might serve as a substitute. Green manures are attempted. I have seen oats and buckwheat tried with success. I hear of rye and even corn being sown broadcast and turned under. There is more timothy, orchard grass, millet and Hungarian grass seed used than formerly.

It would be hard to persuade farmers not to collect compost and utilize manures. Those who obtain good implements, have good teams, and thoroughly work the ground, and are in time with their work, are the ones to succeed. I like to see emulation among the farmers; it is a pretty sure way of adding to the wealth of the country. All feel the benefits of good crops. The farmers can pay their debts; and more, pay as they go. I have heard a good many say, farmers should do without sooner than buy on credit; that is very good doctrine when it can be done. There are exceptions to all rules. If it is manifest that one cannot make a full crop without a genuine and efficacious fertilizer; if by getting it on time and that the only way, why not obtain it thus? One that is prudent and will forego other things he could do without, with the aid of his friend, the fertilizer, he could pay for it, and make a fair per cent. "If a poor man and a coward never made anything," it is equally certain that a lazy man, a reckless speculator and a visionary, will never do much better. If success would be every man's motto, if he would be industrious, judicious and economical, he would be apt to attain his wish. When we have done our best, three times out of five we are apt to succeed. Should we have a good crop this year, let's try to better it next. Put your labor and your money on your land, and you will have a friend to stick to you closer than a brother. C.

Jefferson Co., West Virginia.

The Crops in Chester Co., Pa.

Editors American Farmer:

I enclose you a head of the *Clawson* variety of wheat, which we consider well worthy the attention of wheat-growers. It is a smooth white

wheat; the heads often make 5 to 6 inches long, producing 40 to 60 bushels per acre, and making an abundance of straw—the *farmer's bank*. The crops of Chester county are generally harvested, excepting oats which are now ready for cutting and will make more than an average crop. Our hay crop was much less than an average, the old sods generally being thin on the ground. The wheat crop of this section was a good one—much better than we have had for several years. The Fultz wheat being the leading variety sown last year, has proved itself a hardy variety. The corn is growing luxuriantly, and, with the abundance of rain we are having, promises a heavy crop.

Doe Run, Pa. B. L. WOOD.

Our French Letter.

Messrs. Editors American Farmer:

Veterinary Inspections.

The decline in the exportation of cattle from this country to England, which in 1866 was as much as 38,000 head, and at present is under 2,000, has compelled the French government to seriously revise its legislation respecting its sanitary regulations in reference to live stock.—The principal laws bearing on this subject are anterior to 1786, with special measures—often confused and contradictory—to meet such epidemics as those of 1844, 1849, 1865 and 1871. A commission has been at last named to consolidate and revise all existing laws and regulations affecting the sanitary condition of farm stock. The commission is composed of practical and scientific men of the highest standing, whose office will be permanent, and their services remunerated. The domestic animals of France represent a value of four milliards of francs, being less by one milliard than the war indemnity paid to Germany. This stock is not only important as a food supply, but it forms the basis of farming operations. The last distemper destroyed 100,000 head of cattle in France; hence, the importance of the commission that will secure a permanent staff of veterinary inspectors: charged not only to officially watch contagious plagues, but to insist on farmers rearing their stock in accordance with hygienic conditions. The veterinarian will henceforth be not only a surgeon, but an officer of health.

Salers Cattle.

A race of cattle possessing remarkable qualities, and peculiarly suited for mountainous districts, is the *Salers*, so named after an ancient town in the Cantal Mountains—the latter being offshoots of the Cévennes. The animals are alike excellent for work, milk and fattening, and of late are in much request with foreign purchases. Professor Lambl, of Prague, asserts that in proportion as the population of a country increases, the number of cattle diminishes; so that in time the animal finishes by disappearing in these localities where man draws his support principally from the soil. He concludes that the period is not distant when Bohemia will be unable to support farm stock. If the country, however, by its industry and commerce, can purchase food for animals, the anticipated evil can be obviated.

Ticks on Sheep and Cattle.

Ticks are very prevalent this year on cows and sheep. These parasites belong to the same order as spiders; the mouth is armed with a kind of bill or sucker, consisting of three blades, the central one possessing several rows of teeth. These insects lay an enormous number of eggs; not upon the body of the animal where they have lived, but upon the soil; the young subsequently climb upon plants, where they patiently await the passing by of the animal, and then seize and penetrate its skin at the root of the hair. Several of the insects of course die of hunger while thus waiting, but then, like the spider, they can exist for a long time without food. There is nothing to be apprehended when the parasites are but few in number; when otherwise, the beast can die of exhaustion. In addition to mercurial ointment, an application of oil and turpentine, rubbed in with a paint brush, will soon destroy the nuisance.

The eminent German experimentalists, Messrs. Wolff, Funcke and Kreuzhage, have published the results of 71 practical experiments on sheep between 2 and 3 years old, and belonging to the crossed Wurtemberg breed. In 49 cases the animals were fed on fodder, such as tares, clover, aftermath and meadow hay, with the addition of turnips and mangolds; in 22 cases these roots were superseded by potatoes. It was found that the digestibility of the fodder diminished with an increase in the ration of the roots. Thus, the digestibility of the nitrogenous or protein matters diminished 4 to 22 per cent, when the total of the dry substance of the roots attained 12 to 95 per cent., as compared with the total of the dry matter of the fodder. With potatoes this diminution was as high as 7 to 49 per cent. In Germany the nutritive value of roots is thus estimated according to their dry matter, apart from the ordinary water of vegetation. In France, and perhaps in other countries also, roots are rather considered as aids to augment the volume of the ration, rather than to complete its alimentary value. This seems to be a grave error; for the dry matter of roots is on an average as rich in nitrogenous matters as the dry matter of rye, barley, oats, maize or buckwheat, and the experience of Wolff and his collaborators clearly prove that the digestibility of aliments is markedly variable, following the manner they may be given. These experiments will also tend to allay in some measure the family quarrels between scientific and practical farmers. There are not a few who decline to accept a practical experiment, unless it be controlled by direct chemical analysis. Thus it would seem, that in order to deduce results, it is more important to live in a laboratory rather than among fields and stables. Now animals are themselves excellent chemists, and when five pounds of hay are replaced by fifteen of beet, and the cows continue to furnish the same quantity of milk without loss of condition, it is clear from this circumstance that beet equals in value one-third of hay.

New Fodder Plants.

Among some new fodder plants that at present attract attention, is *fromental* or French ray grass, the Tourves variety being the best. It is an indigenous plant, and is known in Provence,

being peculiar to light soils and natural meadows; it is precocious and vigorous, generally attaining the height of six feet when in flower, which is the moment when it ought to be cut; the second is often as good as the first crop, and the aftermath is also respectable. In the department of the Eure the new "rye-buckwheat"—so named from the length and color of the grain resembling that of rye—is very superior to the Tartary variety; it is precocious, all the grains ripen uniformly, instead of successively; are heavy and yield excellent flour.

Fodder-Corn for Preserving.

M. Goffart continues to do good service to his fellow-countrymen by keeping before their eyes his experience and his experiments on the culture of Caragua or horse-tooth maize for preservation in trenches in a green state, in autumn, for spring feeding. As an instance of the important proportions the culture of Caragua Maize, called after Nicaragua, where it grows luxuriantly, but from whence no seed has been imported, has attained, two years ago only five tons of that variety of Maize were sold for seed in France, and last year the quantity was 250 tons. After visiting numerous farmsteads in the country, noting the various processes for preserving the green maize, and having personally tested them all on his own estate, M. Goffart concludes that the best plan consists in chopping the maize the better to force out the air, trampling the mass well at the sides of the trench, and never allowing it to rise above the surface of the pit. The latter ought to be excavated in a sloping soil, in a dry situation; the walls to be in masonry, two yards under and the same above the soil; elliptical in form, 2 or 3 yards wide, and sufficiently long to contain 80 tons of the chopped forage; the latter will prove sufficient for 12 cows during the winter. The cost of the mason work will be francs 60 per head of cattle, but will be repaid in the first season alone. The top of the trench ought to be closely covered with boards, and all available heavy lumber, stones, bricks, &c., placed thereon to ensure compression. Covering with sand and earth is considered objectionable. The trenches can be extended in parallels according to the number of cattle to be fed. The principle to keep in view is, to exclude all fermentation of the mass, pending, as well as after, being put into the trench. This can be secured, and only so, by expelling the air. Some 2 pounds of salt, per cubic yard of stuff, may be added, not to preserve, but to give a flavor to the fodder—the latter has been found to keep better, the less it was mixed with cut straw, chaff, husks, &c. There has been no good result from chopping up oil poppies with the maize, in order to induce the animals to sleep, and thus fatten more rapidly; such aids, if they do not provoke sleep in cattle, have never yet promoted their putting up flesh.

Regional Agricultural Shows.

Two, among the many regional or official agricultural shows just held throughout France, merit notice: that at Gap, in the upper Alps, where its remarkable race of cattle—the Tarine—is notorious, having the fine triangular head of the Durham; the horns are small and well curved before; the shoulder is all muscle, and the ham is composed of sinews like steel, for the animal has often to seek its food like a goat. The sheep in point of muscle are the same, and the rams have no horns. The raising of sheep is dying out; not more than 50,000 now are fed on the Alpine slopes, where formerly five times that number existed. It has been found that everywhere the sheep put its pointed foot, like Attila's, the grass ceased to grow, because the heavy rains succeeding formed little ravines from the foot marks, and carried away the soil. Cattle are preferred; their hoof is larger, and when grazing they cut the grass to the surface of the soil—not tear it up by the root, as is the case with sheep. The Berkshire breed of pigs succeed best in the Alps. The show at Arras was important—it includes the regions of Calais and Boulogne, where so much produce leaves for England; it is the centre of the beet-growing districts—the rotation being: beet, then wheat or roots, with clover, succeeded by flax, colza, oil poppy and potatoes. It is also the quarter for Dutch and Flemish breeds of cows, which do not differ very much, save in color—the former being mahogany red and the other black; both are good milkers and fatten rapidly. There is an aversion to cross these broods with Durhams, but it was just this crossing that carried off the prize. Similarly with sheep, the Merino once was the favorite owing to its fine wool; the Dishley-Merino has supplanted it—for at the age of two years the animals have an average weight of 60 lbs., a result formerly attained only when three years old; and the fleece, weighing 9 lbs. in grease, brings as high a price as that from Merinos.

Hay-Making in the Vosges.

At this season it may be useful to allude to a plan of hay-making in the mountain, boggy meadows of the Vosges: when the grass is cut, it is only left three hours exposed to the sun; if allowed a longer time on the soil before being carted home, it would fail to soften the stems and so render their digestion difficult. No complaints are made of the fermentation and its consequences, as in the case of green artificial fodder. Tares, generally employed for feeding horses, are mown when the pods commence to form; lucerne, especially in dry seasons, must be cut when the flowers begin to show, in order to save the lower leaves that commence to be yellow. As in the case of lucerne, the leaves are the most nutritive part of the plant—this explains why the French never turn clover over to dry during the day time, selecting the morning and afternoon, the leaves then being less brittle. F. C.

Paris, June 29, 1876.

THE COMPOST HEAP.—No amount of experiments, talk, and large results will draw farmers in a body away from keeping live stock, and the manure pile, and turn them wholly to "chemical farming." The compost heap will still be an adjunct of the prosperous farmer's barn-yard; nor would we have it otherwise. There is a great deal of unnecessary work expended upon this plant-food factory, however, in repeated shovelings to prevent overheating. Thorough mixing and proper pulverization are of course essential; beyond this, work spent in shoveling is thrown away.

Horticulture.

Advantages of Horticultural Meetings.

Dr. Thurber, the distinguished President of the New Jersey Horticultural Society, in his annual address, spoke thus of the benefits flowing from the sessions of the American Pomological Society:

This bringing together at these biennial meetings of those who are engaged in the same pursuits, but in widely separated localities and under very different conditions, is productive of great good. In my opinion it is in their social aspects—the personal intercourse which they allow between men who have long known one another by name or by correspondence—that these meetings have their greatest value. It is true that the society represents but one department of horticulture, but it is in some respects the most important one, and we must recollect that progress in one branch affects all the other branches. The meetings of the society are held at widely distant points every two years, and their influence for good is almost incalculable. Imagine some young fruit-grower who is wide awake to everything that relates to his pursuit; or an older one, who has quietly in his own locality caught at every word written by those of more experience. It is the great event of his life for either of these to attend one of these gatherings, where he can not only see, but actually meet face to face and talk with those whom he has long regarded as authorities in his special department. For such a one to meet a Wilder, a Downing or a Thomas; a Warder, a Flagg, or a Berckmans, a Barry, or a Meehan, and I might name a host of others, is to give him new life; he goes back to his orchard, or his fruit patch, with new zeal; he has heard words of encouragement; he has met the great lights—they are after all only like himself—men—but most genial men—even fallible men; for he asked one of them a question and got for an answer: "I do not know"—and he has actually a higher respect for himself, when he has asked the highest living authority as to a point upon which he himself was in doubt—and this authority did not know. It is in these and many other ways, that these gatherings are of great use. We do not find their best work in the published proceedings, but it is in the mutual help, the encouragement that one draws from the fact that he is not alone in his difficulties, the enthusiasm that always comes of the gathering of many persons with a common object, the hints that one picks up in intercourse with these men, that make this society of great value to all our fruit-growers. Some place a high estimate on the fruit lists, the revision of which is the chief work of the society while in session, and regard their preparation as the great work of the society. These fruit lists have a certain value, but they cover so wide a territory that they can only be approximately correct. In many cases a single individual will answer for the success or failure of a fruit in a whole state, which comprises as large a territory as Great Britain, and nearly as varied a climate.

On the Causes of Pear Blight.

Messrs. Editors American Farmer:

My article on Pear Blight I observe appears in your last issue, with that of Captain Snow, and I am tempted to comment on the second paragraph of his communication, and really wish he and I could take a walk together in my peach orchard and discuss this matter like a friend and myself did a few days since, examining the *post mortem* appearance of trees, affected varieties, soil, *etc.* Any one, in reading the two articles, will observe that while Captain S. and I agree on many points and have the same experience with certain varieties, we are not in accord as to the *cause of the blight* this season, and while my trees that made little growth of all varieties had no blight, escaping like the Seckel, his tardy growers were *equally attacked with others.* "Doctors say that they never can successfully cope with a disease until they discover the cause, and this is the case with pear blight." To this I must, as one of the profession, totally dissent, since we almost daily meet cases of disease, and treat it with success without any positive knowledge beyond conjecture as to the cause.—We know of pear blight, most of the circumstances under which the disease occurs, and certainly as much of its pathology and symptoms premonitory and actual positive indication of its appearance, as we do of many serious and fatal blood diseases to which we are ourselves subject. "I can't pretend to say what it is." "I am well convinced it is not frozen sap." I agree with him in both, and "frozen sap" is not necessary to produce blight. We have frost-bite to treat as a disease, and no one supposes the blood to have been frozen in parts that have been killed by excessive cold weather. I have sundry times amputated after the line of demarcation had been formed. We *do contend* that the intense cold has driven the blood from the part, caused such contraction of the tissue, rupture of cells, as to *unfit* the structure for future normal circulation and healthy performance of its functions. And this is what the cold did on young wood—"young suckers from root badly hurt," unmatured wood any and everywhere exposed when full of watery sap, being peculiarly susceptible to this extreme cold, no more resists it with safety than the toes of a man long exposed to snow and ice. The difference in points of attack is readily accounted for, when we accept the theory as true of the two currents of ascending and descending sap in cambium and sap wood. Why certain varieties escape entirely, and others suffer under similar circumstances must be ascribed in part to habits of growth and maturing their wood in early fall, slower start in spring, and lastly to constitutional peculiarities which is well known to influence the pear in its success, both in wood growth and fruit production in certain climates and on certain soils. Flemish Beauty here sheds its leaves, ceases growth early and never blights; Seckel grows slowly, enjoys immunity. Beurre Clairgeau (50 trees) last fall ceased growth early, and shed their leaves to great injury of fruit—no blight; others I might mention. Examine your Beurre Superfine wood where the suckers from the root blighted; see difference in texture of wood, and whether from

above or before the graft or bud, seedling sucker with thorns peculiarly liable to blight or what we call water sprout, the wood will be found *pithy* and tender; ergo, sensitive as a child to *sudden changes of temperature.*

It commenced after rains, and I have noticed that the same weather inducing or tending "to produce rust in wheat" is followed by blight. *Rains frequent and hot suns following* are the conditions of temperature, with excess of water and moisture stimulating activity of circulation and growth, which bring *out the disease.* Here is the strong point in the fungoid theory of blight maintained by Mr. Saunders, and the microscopist, Taylor, of the Agricultural Department at Washington. It is not uncommon to see a person exposed to certain influences well known to produce specific diseases such as malarial fevers, and not be attacked for weeks or months. Is the true cause of rust in wheat any better known than that of blight? Is there not some mal-influence exerted on the *sap or fluid circulating* in the plants? Does it not occur just at the time in June when the heaviest draught is made on the plant to mature its grain? The answers to such questions suggest causes of disease beyond our control *directly*, and very much the same is true of the disease, pear blight. The old saying, "one ounce of prevention is worth a pound of cure," is peculiarly appliable to all diseases of farm crops and fruit trees. The diseases of the human family supply many anologies with that of blight in the pear, and rust in wheat, cotton, firing of corn, pout in peanuts. Physiology, human and vegetable, is an interesting study, and constantly supplies us with useful knowledge in the study we term pathology, and leads to a correct diagnosis, *i. e.* finding out the disease. We may, and probably do, not know all the causes of blight, but we have already a list of the causes or conditions under which it occurs sufficient to form an opinion of its nature or pathology.

We are satisfied that some of the causes of blight are probably beyond human control directly. I refer to the seasons and sudden variations of temperature.

The drainage of the soil, quick or slow, early or late growth, cultivation of the soil or rest in sod, and everything pertaining to hygiene and normal, natural healthy growth of structure of the trees, with vigor and matured strength to meet adverse influences, *is* within our power.

The constitutional tendency to this disease, by certain varieties on certain soils, is a subject which deserves thorough and careful investigation, and should command more the attention of pear-growers than nurserymen. Many trees enjoy perfect health for several years in almost any well-drained soil, to die of blight after or at fruiting age in the same soil. There are strong arguments in my own experience to enforce the opinion that the extension of the roots of the vine of the grapes in an acre vineyard after three crops free from rot, was a prime cause of the *rot* and mildew the past two years, and my older Bartletts, ten years planted, suffered from twig blight this year, while those four years planted escaped entirely. Hence, root pruning is suggested. Since writing the article in your last, I have carefully visited all the trees in the orchard, and am thoroughly satisfied that *every* dead twig and limb contracted its death-blow from the cold wave in early spring.

"Now, it seems to me if the sap was the cause all the tree would partake of the poison." Very good reasoning and natural inference and in many instances absolutely true in blight from *wet feet* or the soil saturated with stagnant moisture, poisoning the *source from whence the tree derives its nourishment.* In such cases there is *tree blood-or sap-poisoning as in Typhus fever.* Here is a blight from internal causes. The soil, in extra contradistinction to that from external causes, "variations of temperature" in the air surrounding the tree supplying the breath or air of life. Twig blight proper is very similar to "frost bite," death of the extremity from external cold, and we know it is hastened and aggravated by sudden return of the blood into the structure of the injured parts; hence we apply *cold*, rub with snow, and endeavor to avoid *sudden* return of the blood to injured structure from the cause, extreme cold having *injured the cellular structure.* In reference to the grafted tree with Glout Morceau the same principles with constitutional proclivity of some varieties to blight will explain it. Extremes of either debility or excessive vigor of the trees, I have reason to believe favor blight. The debility in fruiting and the vigor in tender unripened wood and "sudden changes of temperature," *cold* or heat and moisture in excess and combined.

It is not usual for blight to attack apple trees, yet the present spring there is wide-spread complaint here of blight on sundry varieties. Recently two barrels E. Harvest apples were shipped from a tree that presented many signs of blight on *leaves* and twigs, more particularly the leaves brown-spotted. "Again it breaks out all over the whole tree and extends to whole in a few days," and probably kills the tree. This is truly *root* blight or *tree blight from causes developed in the soil.* NANSEMOND.

Chuckatuck, Va., July 5, 1876.

The Keeping of Pears.

BY W. H. GOLDSMITH, NEWARK, N. J., IN PROCEEDINGS N. J. HORTICULTURAL SOCIETY.

I do not know that I can offer you anything new on the keeping of pears. Certainly I have no new theory concerning the matter, and what I propose to bring before you is simply a few facts that have come under my observation during a few years of experimenting, hoping it may lead to a discussion of the subject that will bring out the experience of others.

Having seen Bartlett pears advance 200 per cent. in price, in a fortnight, in the New York market, my object was to find some plan whereby I might keep pears in quantity for a limited time, when the market was glutted, without the large expense of a patent preservatory, or the costly double house proposed by Elliott and other writers, adapted more particularly for amateurs, preserving a few specimens rather than for market purposes.

I have found ice indispensable; and confined air, and dampness, with a temperature low enough to prevent mould, beneficial; and think the Chloride of Calcium used generally in fruit houses to absorb moisture not needed with the

pear, it having a more porous skin, or at least wanting in that waxy or greasy feeling, so common to the apple, thereby admitting the evaporation of its juices more readily in a free atmosphere, and becoming wilted, tough, and insipid. A friend of mine succeeded last season in keeping a small quantity of Lawrences and Vicars in good condition until April, by coating them thinly with tallow, and placing in a cool room, but the plan would hardly be practicable with a large quantity. I think it an injury to keep them too long at a very low temperature, as it seems difficult to ripen and color them afterwards.

I first tried a small room, between two bodies of ice, covered with galvanized iron, upon which ice was kept, but could not get the temperature below 40° to 45°, which proved a very good place to ripen pears, because of the uniformity of the temperature, but not cold enough to retard them sufficiently for the object I sought.

The past two seasons I have placed them in new boxes, containing one bushel each, directly upon the ice, and covered them one foot deep with sawdust, and it has proved successful. The past season seventy-five bushels of Bartletts, put on the ice September 1st, were sent to market October 1st, almost as fresh and green as when put in, with a loss of less than ¼ of 1 per cent. Not having a sufficient quantity to make the selection as choice as I wished, many wormy and otherwise defective specimens were put in that ought to have been rejected. Duchess, D'Anjou, and Clairgeau, put in October 2d, were sent to market December 22d, in fine condition. The latter lot were taken off the ice November 10th, when the warmer weather was past, and put in a cool room, wishing to ripen them for market at Thanksgiving, at which time the ripest were selected and the balance sold at the holiday season.

I have been careful to put them in sound boxes, that have not had decayed fruit in them, that there might be no germs of decay or mould. Many boxes would open uniform in appearance without a single specimen unsound, showing that the fruit from some trees keep better than that from others; and were such fruit selected, I think there would have been no difficulty in keeping Bartletts until November 1st; but for market purposes it is not profitable to keep them so long, as I had evidence the past season, having seen Bartletts offered in the New York market the last week of October, 25 per cent. less than they sold for in the first week.

It required about sixty square feet surface of ice, to keep the seventy-five bushels, although I think the same space would have kept one hundred bushels. The Bartlett has proved the most profitable for handling in this manner, and the Seckel next. I have read of large prices obtained for Vicars, and other kinds late in the season, but my experience has been that the demand for pears falls off rapidly on the appearance of cold weather, and is very limited during the winter. I have known the sales of retailers to vary more than 100 per cent. from day to day during the fall, corresponding almost exactly with the state of the weather; and most of the pears I have sold late in the season have been taken by the large hotels of New York, very few going into the hands of retailers.

Floriculture, &c.—August, 1876.

By W. D. Brackenridge, Florist and Nurseryman, Govanstown, Baltimore county, Md.

Lawn and Pleasure Grounds.

As a usual thing, little planting of trees, &c., on the lawn and flower garden is done the present month; the reason for which is that the weather is almost invariably too dry and too hot; but preparation should be made towards the end of the month, so as to take advantage of the first rainy spell in September to transplant the various kinds of the Arbor-vitæ family, either singly or in hedge rows, as may be desired. We find also that almost all of the Spruce tribe succeed, if moved at this season, thus affording them time to lay hold of the ground before severe frosts set in. The Pine and Juniper families—as a general thing—do best when transplanted in spring; but in no case would we advise fall planting to be done, except where it is clearly evident that the site to which they are removed will be sheltered from the cold drying winds of winter, as the evaporation going on then is greater than during the summer dog-days.

Where the system of training Dahlias to stakes is followed, then a good mulching of stable manure should be given for at least eighteen inches wide all round the stock; and if the weather is dry a good soaking of water may be given them through this mulching, at least once each week. Dahlias never do much good until such time as the weather becomes cool and damp, and those permitted to lay on the ground produce the best flowers, and are less subject to the attacks of the red spider.

Chrysanthemums, to make them bushy and prolific in flowers, should be pinched back frequently, but in September this pinching should be discontinued; occasional watering with liquid manure is very conducive to the health of the plants and size of the flowers.

Arbors or summer-houses are among the essential requirements of the pleasure garden, as places of retirement and shelter during rains and hot weather, and none of them may be deemed complete without being screened by creeping plants, so trained as to exclude the direct rays of the sun, and at the same time admit a free circulation of air, and so manipulated as to permit the ends of the more delicate shoots to remain suspended in tresses around the openings; the various kinds of running Honeysuckles, Wistarias, Celastrus Scandens or Staff vine, and Akebia quinata, are good hardy plants for this purpose. And should the house be large, a few running roses and the sweet-scented Clematis may be added; but as the last-named does not remain long in bloom, we would have a bed of Mignonette and a Sweet Briar bush planted not far distant, the fragrance from which, after a gentle shower of rain, is to most people very agreeable and refreshing.

When a strong spring or running brook is at hand, this can easily be dilated so as to form a pond in which Water Lilies of various kinds could be introduced, to the beauty of which could be added that of gold fish, plying hither and thither among the smooth peltate leaves, and the boundary to this pond we would form of irregular blocks of angular stones, in the chinks

of which we would plant various kinds of hardy Ferns, selecting those whose frouds were of a curving habit. We never could see much beauty in any elevated rock-work in our hot country, but a rocky slope or bank bedecked with graceful foliage we can admire. With regard to fountains or jets of water, as we find them introduced on lawns in front of dwellings of the present day, they may be considered, from their want of force and lack of design, as being more refreshing by tempering the atmosphere than ornamental.

In the case of vases filled with flowering plants being introduced extensively as garden ornaments where there is a great breadth of lawn and an abundant supply of forest scenery, the design of the grounds being what is known as the English, in such a case we think them out of place, and might therefore be confined to some site near the dwelling, or where there is a terrace or bank overlooking the flower garden. There also prevails an error in vases: that is, they are often so high that when filled with plants, these are above the level of the eye, thus creating at the same time the necessity of using a ladder to attend to the watering, and otherwise keeping the plants in order. The most appropriate place for flower vases is where the plan of the grounds is symmetrical, or laid out after the style usually known as the Italian.

Greenhouse.

We fear our lady readers will look upon us as neglecting to attend to their little wants by dealing more with subjects which seldom come under their notice; true, we might generalize a little more by beginning first at the bottom of the ladder and by degrees ascend to its top; but let us modestly hint, kind reader, that at the present season of the year, both plants and people have had to humble themselves and keep quiet—a little in the shade; we say a little, for we are of the belief that to exclude ourselves or plants entirely from the benign rays of old Sol, is not the best way to secure a healthy subject.

Ferns, as a tribe of plants, are now becoming very popular, but as a general thing delight in shade and humidity, and in this respect some of the Todeas and Hymenophyllums are so sensitive that by exposure to light or drought for only a few minutes, their frouds will shrivel up and perish; while a few others with leathery frouds will bear light with impunity.

With respect to Richardias or Calla Lily, a few of these intended to blossom early should now be potted in rich earth. Also shift into larger pot all Stevias, Eupatoriums and Chrysanthemums, as the flowers of all are intended for early winter bouquets; keep the plants bushy by pinching back for a while, and keep watering with liquid manure, which will improve greatly. Small Caladium plants should be encouraged by shifting into larger pots; keep them in a warm, humid, partially shaded situation.

SULPHATE OF AMMONIA is an excellent manurial liquid to apply to Verbenas and other flowers, giving the foliage a dark green, luxuriant and healthy appearance. Prepare it in the evening before using, by dissolving one ounce of ammonia in two gallons of water. It may be applied with safety about once a week.

Rhododendrons at the Centennial.

We give below Mr. Meehan's description, in the July *Gardeners' Monthly*, of the display of Rhododendrons in May:

The great floral feature at the Centennial for May was Mr. Waterer's Rhododendrons. A house was built for these by the Centennial authorities, like a huge curvilinear conservatory, only covered with canvas instead of glass. Mr. Waterer arranged the ground inside in what is known to gardeners as the "Regent's Park style." In some places the earth was raised so as to be several feet above the natural level, forming a "bluff," around which a walk would be led, and then again were levels and rises, with narrow grass verges and broad sanded walks, the Rhododendrons thickly planted in the beds, and the whole forming a delightful piece of landscape gardening. There were fifteen hundred plants in about eighty varieties in the collection, and we think it is safe to say that nothing ever exhibited in a floral way in the United States attracted so much attention or received such unqualified admiration. The house was crowded from morning to evening, and many visitors who found themselves unexpectedly among so much floral beauty telegraphed to their distant friends to come right on, and see the glorious sight. It was evident that although all the leading American nurserymen have been for years endeavoring to introduce Rhododendron culture, not one in a hundred of the thousands of visitors here ever saw one before, and the influence on their introduction will be immense.

But not only to the great multitude was this a great lesson, but all of us found much to learn from the great exhibit of so many varieties all blooming here together. We fancy that few ever took into consideration how great is the diversity of form and habit among these plants, as well as in the form, color and markings of the flowers; yet to those making collections of these beautiful things such points will enter largely into the system of selections. Some make long straggling growths, while others have a dense, compact habit. Some kinds perhaps making specimens four or five feet high would have but a dozen or so of heads of flowers, while other varieties would have half a hundred in plants of the same size. Then there is a great difference in the shape of the heads—some kinds having them as round as an orange, and others cone-like, as in a pine-apple. Some kinds have rather short pedicels to the flowers, and then the head is compact, while others are long, and then the head is loose. So in number. There are kinds which will have nearly double the quantity of flowers in a head that others will. All these and similar points enter largely into the sum total of pleasure to be derived from a collection of Rhododendrons, and no doubt many of them were noted in the memorandum books of the visitors, which we were pleased to see in common use.

It is generally known that the Rhododendron is an "American plant," and people wonder why Americans cannot grow one of their own articles as good as Europeans. It is not as generally known that these garden forms are hybrids between the American species and the Rhododendron ponticum, and perhaps in some cases R.

arboreum, which have a much tenderer constitution, and hence where this "sap" predominates, the plants are not hardy enough for an average North American winter. The American R. maximum is found wild as far north as Nova Scotia. The Catawbiense flourishes in the cold mountains of North Carolina. If these two alone were concerned in these hybrids we should have a true stock of "American plants." The seed of the Rhododendron is as fine as dust; and only those skilled in seed-raising can grow the plants in this way. It has to be strewn on or very near the surface, and the atmosphere kept so moist that very little watering to disturb the seed will be required. After getting the plants, if peculiar kinds are to be perpetuated, they have to be grafted, and this adds to the expense. Seedlings not grafted are generally beautiful enough for the average grower. They have a good variety of color and form among them.

As a matter of culture it may be noted that the roots are extremely delicate and hair-like; and as roots must have air, the plants must be kept very near the surface in the average heavy soils of our country. Where the soil is of a loose, sandy, stony, or peaty character, full of air spaces, this precaution is of no consequence. The Rhododendron seems also to have an antipathy to lime. Those varieties which are of the hardiest are still much benefited by a shelter of trees or bushes from the windward quarter. If they have this protection, and the precautions we have suggested be taken in regard to keeping the little roots near the surface, and in cool, open soil; it makes little difference whether they be grown in the sun or the shade.

These and similar questions were plied us while we were taking notes in Waterer's tent, so we thought we might just as well incorporate the answers we had to give in this notice here. Often it was observed to us, "So many look alike; which are the most distinct?" In answer we give the following, without, however, being able to say that they are the best selection for standing our severe climate. That can be only a matter for experiment, though some, as for instance Everestianum, are known to do well:

Album grandiflorum—very large dense heads of lilac and white.

Everestianum—a dense grower, freer bloomer; flowers rosy pink, with crimped edges.

Archimedes—rose white, small, but numerous heads.

Album elegans—rosy white; heads not numerous, but large and conical.

Titian—rose shaded white; rather loose habit of growth, but very showy.

Lady Eleanor Cathcart—one of the most attractive, rosy flowers, with dark spots on the upper petals; heads compact and numerous.

John Waterer—deep vermilion rose; one might say as good as some Rhododendron arboreums. Rather diffuse in habit.

Queen—delicate rosy white. The great charm of this is in its rounded lobes of the corolla; almost as perfect in this respect as the Camellia.

Mrs. Halford—has very large heads, with diffuse habit.

Vandyke—small dense heads of purple crimson flowers.

Minnie—small heads, rosy white, with yellowish green spots on the upper petal; an easy, free, rapid grower.

Lady Cathcart—a superb variety, looking as if the heads of flowers were made up of the old-fashioned Pelargoniums, before we had to mix up geraniums with them.

Then we noted as possessing points of special merit as distinct Archimedes, Fastuosum pleno, Michael Waterer, Lady Armstrong, Mrs. John Waterer, Stella, Lady Cleremont, Concessum, King of the Purples, John Marshall Brooks, and Mrs. John Chitton.

Desirous of knowing how far those we selected, as the most distinct of the collection as we saw them in bloom, would come out in a contest with the whole of the collection as Mr. Waterer knew them, we asked him for a list of six of those he would consider the most distinct, whether in flower or not, and these are they: Everestiana, Mrs. John Chitton, John Waterer, Lee's Purple, Charles Dickens, and Titian. It was a great pleasure to note that one who came so far to exhibit at this great exposition did his part so well, and that his efforts were so highly appreciated.

We went from here to the open grounds, where the two firms of Parsons, of Flushing, had made grand exhibitions of Rhododendrons also. If they had had a house given to them as the commission gave one to Mr. Waterer, or if only a part of the house had been given to Mr. Waterer and a part to the two Parsons, there would have been a fair chance of a competitive comparison. The Parsons' collections in the open ground had apparently a greater number of fine specimens than the Waterer collection, and perhaps as many varieties, but of course had no competitive chance whatever with those in the house to make a public impression. In fact not one in a thousand who saw and admired the Waterer collection know now that the Messrs. Parsons had any at all on the grounds. It is pleasant to be able to say that, notwithstanding the immense disadvantage the American Rhododendron firms were placed under, we have not heard one word of complaint from the Messrs. Parsons—nothing but pleasure that our English friends who came so far with their productions should be treated so well.

The Gladiolus and other Summer Flowery Bulbs—their Usefulness for Lawns and Door-Yards.

(Read by Geo. Such, before the New Jersey Hort. Soc.)

The Gladiolus certainly deserves to stand first among the summer flowering bulbs, on account of its great masses of flowers and their incomparable range of colors. Do we want scarlets so vivid that the eye is fairly dazzled and bewildered by them? Let us take Fulton, Le Phare, Le Titien, Lord Byron, Meteor, Meyerbeer, Phœbus, Van Spandonk, or Virgile. For reds clear and bright, but more subdued, let us take Antonius, Benvenuto, James Watt, Le Poussin, Montaigne, Mons. Legouve, Napoleon III, and others. We have crimsons of all degrees of intensity and richness, from Jupiter and Robert Fortune, of exceeding depth of color, to Horace Vernet and Minerve. Then these crimsons are at times

overcast with purple or with violet, as in the case of Athalia, Macauley and Phidias; or are varied with white, yellow, rose and other tints and shades in endless variety.

Rose color we find, from the faintest blush, as in Marie Stuart, to the exceedingly rich satin rose of Octavia or Ulysses.

Yellow is well represented by Eldorada, Ophir, Pactole and the clear canary color of Solfatarre.

White of the utmost purity and delicacy is found in Beatrix, in La Candeur, Madame Desportes, Norman, Shakespeare, and a host of others, and this is combined with such exquisite tints of lilac, carmine, rose, flesh-color, violet and other colors, as can scarcely be imagined. Indeed, much as I love the fine Orchids, the Cattleyas, Lælias, Dendrobiums and other beauties, truth compels me to say that many of the Gladiolus flowers are not one whit behind them, either in brilliancy, delicacy, or in elegance.

A good idea of the variety of color to be found in the Gladiolus may be had by examining a bed of seedlings. It is pretty generally known that this flower does not come true from seed—in other words, that seed is not at all likely to produce colors similar to those of the plant from which the seed is taken; but it is not so generally known that among thousands of seedlings, hardly two resemble each other; and yet almost all of them are very handsome. In fact, any one raising a quantity of seedling Gladiolus bulbs, is astonished, when they flower, to see the rich result; there is such a perfect overflow of beauty; all seem good enough to keep for future flowering, and the raiser finds it a difficult matter to make up his mind to condemn even a single one. They are not, of course, likely to be so critically judged by the person who raised them as by some one else; for it is said "to think children handsome who are ugly, and verses good that are bad, they must be our own;" but, no matter by whom judged, these Gladioluses will be considered admirable.

In planting the Gladiolus about the lawn or in the door-yards, a better effect is, in my opinion, produced by massing the colors harmoniously, using for the purpose the named varieties: for though a bed of seedlings is a fine sight, the mixed colors have what some one calls a "spotty" appearance, which is wanting in character as compared with the effect of broad masses of color well combined. It is well, too, to hide to a certain extent the unsightly Gladiolus stalks, by putting some low-growing plants in front of them. I have seen a beautiful effect produced by planting *Tritoma Uvaria* among variegated *Arundo Donax* of suitable height: the orange and scarlet spikes of Tritoma showing up splendidly through the green and white variegation of the reed. The Gladiolus might undoubtedly be used to fine advantage in the same manner.

If the soil be not too wet and heavy, I find it an advantage to plant my Gladiolus bulbs, especially those of small size, quite early,—say about the 1st of April. When planted thus early, the bulb throws out more abundant roots, I think, and the growing stalk is not compelled to make heavy drafts on the bulb, which, until the roots are sent out, is the sole nourishment of the young growth.

In my light, sandy ground I plant the bulbs from 3 to 6 inches deep, according to size, any as large as a hickory-nut being put not less than 3 inches deep. Very shallow planting is a great disadvantage, for the new bulb is formed on the top of the old one, and if very near the surface, the first dry weather checks free growth and materially injures the flowering.

Not wishing to consume much of your time, I shall say no more about Gladiolus—whose fine hybrids have been introduced within a few years only—but will pass to the Lily, which for centuries has occupied a place in the hearts of those who love flowers.

Among those best suited to door-yard cultivation are the old-fashioned Tiger Lily and its double-flowered form, lately introduced from Japan. *Lilium umbellatum*, too, is easily grown and brilliant in color, being dazzling red and orange.

The Japanese *Lilium Leichtlinii* is extremely fine and very distinct, of pure canary yellow with a few purplish spots; but this Lily is as yet rare and high-priced. Most of the Japanese Lilies are of a high order of excellence, and almost all of them are useful ornaments about our homes. The noble *Lilium auratum*, the Golden Lily of Japan, with its immense flowers of rich white ground and broad golden bands, is, by some, thought to be the best of all; while those whose taste is for more modest beauties, prefer those Japanese sorts that are commonly known under the name of *Lilium lancifolium*. Among these we have *L. lanc. rubrum*, with sweet flowers all flushed with crimson, and *L. lanc. roseum*, its rose-colored companion. *L. lanc. album* is the same Lily in pure white, and in *L. lanc. punctatum* we find the white ground delicately spotted with pink; but this spotted one and the pure white have feeble constitutions in our climate, and are very liable to rot down suddenly, even under our tenderest care.

A new Lily, in this same section, sent out in this country under the name of *L. lanc. præcox*, and in England under the name of *L. lanc. candidissimum*, is, I think, sure to supersede the older *L. lanc. album*. It is of the clearest white, of robust constitution, and of the sweetest odor. Indeed, all these *lancifolium* varieties are exquisitely fragrant, having none of that heavy perfume that seems to thicken the air, as in the case of *L. auratum* and some others.

I would gladly, if time permitted, say a word or two for *L. excelsum*, *L. longiflorum*—and for others not so well known. *Lilium Candidum*, the old white Lily, of gardens, is, with many of us, among our earliest remembrances in the way of flowers, and needs no word of praise at this late day.

The Lilies we have from California, such as *L. Humboldtii*, *L. pardalinum*, *L. Washingtonianum*, and their companions, are delightful if they can be had in good health; but growing in cooler air, in shady woods and by the mountain streams of their native home, they but ill endure the hot dry days of July and August. They pass the winter outside well enough, and come up finely in the spring, with leaves of richest green, full of promise; but as the warm days come on, the leaves wilt, then turn brown, and sometimes the stalk dies down before even a single bud has burst into flower. If grown under conditions

similar to those in which we find the wild Lilies of our swamps and woods, they would doubtless do better, and I hope to make trial of that this coming summer.

Among the bulbous plants on our lawns or in our door-yards, we must keep a sunny spot for a few Tigridias, with their glorious flowers of crimson and of yellow. They need but little care; what suits the Gladiolus will suit them, and they will abundantly repay the trouble we may take with them.

Indeed, what flowers will not do so? They are the best and kindest friends of those who love them, cheering us in life and growing about us when we have gone to our long rest. Others may forget us, but the flowers do not; for violets bloom and spread their fragrance over even nameless graves.

Agricultural Calendar.

Work for the Month—August.

Now, if ever, the farmer has some respite from the ever-pressing duties of his calling; the hardest toil relaxes and much of the minor work may be deferred to the most convenient season; and even an occasional holiday indulged in. But there is always work enough to be done, and we offer some hints on seasonable topics.

Rye.—Many of our farmers try to get this crop in the latter part of this month, though generally when sown for grain it is deferred till the early or middle part of September. If intended for cutting green for early feeding, or for early pasturage, it is advantageous to sow it early. Where much stock is kept successive sowings should be made. When sown as a grain crop, a bushel of seed to the acre is enough; when for soiling purposes or pasturage, two bushels is not too much. A soil with a considerable mixture of sand is preferable for this crop, which, in this vicinity, is more valued for the straw than for the grain. It frequently happens that good straight rye straw brings as much in our market as the best timothy hay. Putting the land in good tilth and properly enriching it, if deficient, is now regarded as better policy than the old-time plan of sowing it on the poorest fields of the farm. Ten to twelve good loads of barn-yard manure, 250 or 300 lbs. of a good super-phosphate, or 200 lbs. bone meal, with 50 lbs. Peruvian Guano and a bushel of salt added, will be found profitable applications.

Plowing for Wheat.—This work ought now to be the subject of the first importance on the farm, and finished as soon and as rapidly as possible. Deep plowing is a preservative from the evil of winter killing; but the ground should be allowed to become compact before the seed is sown. A variety of opinion exists as to the best mode of applying manures; some preferring to plough under, and others to apply on the surface after plowing. It is certain that neither for wheat nor rye should the manure be ploughed under deep.

Buckwheat may escape the frosts if sown at once, and may be sown up to the middle of the month, for turning under for green manure.

Flat Turnips may be sown any time this month, but by preference by the 20th. The strap leaf, white or purple top, is the most used here. One pound to the acre is enough, sown broadcast, which is the plan generally adopted. Super-phosphates seem especially suited to turnips, and a dose of 200 lbs. to the acre will enable them to start off vigorously and produce a crop in ordinary seasons. With our usual seasons it is now too late to sow Ruta Bagas, though on freshly-worked ground, with favoring weather, they might yield a crop.

Tobacco.—The cultivators should be kept going till the interfering leaves are liable to be broken, and the crop should be laid by clean and free from grass. A lookout must be had for the worms, which may be expected now in force. Top as the growth advances, and take out all suckers before cutting.

Timothy.—This is a grass which requires that the soil be in the best condition to secure a respectable cutting as long as it lasts. A clayey loam, not too dry, probably suits it best; but any fair land will produce it. Deep ploughing is undoubtedly an advantage, and we believe subsoiling would be beneficial. Manure and harrow, and roll, and harrow and roll, and harrow again, until you get the ground in the finest possible condition, Of suitable fertilizing applications we name ashes, plaster and salt mixed; super-phosphates, bone meal and dust; and, of course, barn-yard manure. A peck of seed to the acre is enough for average soils. The seed should be carefully sown to secure even distribution. Use a brush or light harrow. Some farmers sow turnips with their timothy. The timothy is not sown till the turnips are up, when a light harrow run over the field covers the seed and cultivates and thins out the turnips.

Making Manure and Composts.—We have always urged strenuously the importance of this work, and pointed out again and again the advantages of scrupulously attending to it in the warmer part of the year, when the materials presenting themselves are so abundant in quantity, and when the hot sun so much helps their fermentation and decomposition. The following from a cotemporary is so much to the point, and coincides so entirely with what we have so often presented, that we offer it in the place of any further suggestion of our own:

It is generally considered that the winter is the season for the accumulation and preparation of manure. During the summer season this fundamental business of the farmer is generally neglected. The consequence is that much valuable material goes to waste, and much time, that is equally a valuable element in the preparation of manure, is lost. During the summer there are ample opportunities for the collection of large quantities of waste vegetable matter, such as straw, coarse herbage, or weeds from uncultivated lots, fields, swamps, road-sides, and fence rows, the clearings of ditches, and road-scrapings. These may be made to furnish a large mass of fertilizing matter. Besides these, there are the clearings of village streets and garbage heaps, the refuse of tanneries, woolen factories,

shoe and harness shops, slaughter-houses and other such places, that are of the greatest value to the farmer. The trouble is that the proper manipulation of these matters is not understood, or is supposed to be too laborious to be practicable. But on the contrary, when rightly managed, these gathered refuse matters which may often be procured for the picking up, may be turned into valuable manure with but little labor.

The method of utilizing them is by piling them in heaps along with all the stable manure that can possibly be made or procured, in such a way as to hasten the decomposition. We have found the least laborious plan is to deposit these as near as possible to where the manure is to be used, which is generally upon the fall grain crop, and there build them up into a compact pile made flat and broad upon the top, so as to receive as much rain as possible. Much moisture is needed to facilitate decomposition and to preserve the mass from over-heating or dry rot, by which the most valuable portions of it would be driven off and lost.

It would be well to note the effect of this method, as by understanding the results to be obtained one may readily adapt his peculiar necessities or conveniences to them in his own way, and make rules for his own guidance which might not be proper under other circumstances. The result desired is to procure the decomposition of all these mingled matters in the most rapid and effective manner, so as to render them of the greatest value for the nourishment of the crop. The most active agencies for the decomposition of vegetable or animal matter are warmth and moisture. These set in operation an active fermentation, by which the mass is reduced to such a condition that its various elements are separated and forced into new combinations, in which they can enter into solution and be absorbed by the roots of plants. Anything that has at one time formed a portion of a plant or an animal is thus—and only thus—made fit to enter into formation of other plants or animals. If by ill management any part of this matter is lost or allowed to escape, the value of the manure is lessened. If the heap is allowed to become too wet, and water drains from it, there is a loss in what the water dissolves and carries off. If it becomes too dry and overheated, a sort of slow combustion takes place known as dry-rot or "fire-fang," and the manure is reduced to its mineral elements only, and the nitrogen or ammonia, its most valuable portion, escapes. The heap should, therefore, be so managed that at no time should its temperature be permitted to rise above 100°. If this is likely to occur the mass should be thoroughly moistened or else turned over and mixed with a quantity of absorbent earth, swamp muck, or road dust. A high temperature will cause the ammonia that is dissolved in water even to become volatile and be lost, and should be carefully guarded against. There is nothing gained by any higher temperature than this.

It is supposed by some that by allowing the manure to heat, any seeds of weeds contained in it are destroyed. We have found no reason to suppose this to be true. On the contrary, we know that a heat of over 100° will not injure seeds of most of the common weeds or agricultural plants that are generally found in manure heaps. It is therefore best to exercise care that they should be excluded, and no weeds that contain seeds should be put into a compost heap, but should be burned to get rid of them. In the management of so important a matter as this the farmer should act thoroughly, and not be misled by the opinions of his neighbors into doing that which he has reason to believe is unwise. If he studies the principles which govern the decomposition of organic matter and the needs of his crops, he can form rules for his own guidance, but until these principles are thoroughly understood there is a risk in making deductions from them.

Grass Lands and Pastures.—This is a good time to top-dress these with fine, well-rotted composts; barn yard manure, ashes and salt; fine bone or super-phosphate—harrowing and cross harrowing. If at the same time timothy, orchard-grass, red-top and other seeds are sown, the renovation secured will soon be apparent.

Live Stock.—Sheep should be salted and have tar provided to protect them from the fly. Horses ought to be kept in darkened stables to save them from the torments of insects. Cows should have some extra feed as the pastures become short. Nothing is better than fodder corn at this season, and we hope all our readers have been provident and humane enough to prepare for a supply of it.

Vegetable Garden.

August.—Fill up vacant spaces in the garden where matured crops have been gathered with late crops, such as cabbage, turnips, spinach, &c. If left unplanted, such places are apt to become filled with weeds, and prove not only an eyesore, but a source of propagation to infest the whole garden. Remove all litter to the compost heap.

Beans for late use and pickling may still be planted in rich ground. Cucumbers may still be planted. Celery may still be transplanted. The ground should be very rich. If cut-bark in the seed-bed there will be little trouble with them; but it is well to water them if very dry weather ensues after planting. Cabbages and cauliflowers ought to be well worked and the earth drawn to them. Lettuce may be sown in good ground for fall use. Spinach may now be sown in drills 20 inches wide. Sow white turnips, and if attacked by the fly, scatter plaster, air-slaked lime, or ashes, on the plants.

A subscriber inquires as to the best time to cut off asparagus tops, and whether it is better to leave them on the beds as a mulch or cart them away. They should be cut before the maturing of the seed, as that tends to weaken the roots. Our own practice is to leave them on the bed, and towards fall burn them.

Non-Heading Cabbages.

A correspondent of the *American Agriculturist* says:

Last autumn I was mourning over an unusual number of half-developed cabbages, which were only fit to be fed to the cows, and mentioned the fact to a Duchess county farmer, who is in busi-

ness in New York, and has lately bought a farm near us, asking if his crop had turned out badly. His answer was, that he had no more soft heads than he wanted, or to the effect that he would feel disappointed if he had not a considerable number. Now we, neither of us, raise cabbages for market, but for our own consumption mainly, and I was utterly at a loss to know what he could do with a quarter of his crop that failed to make heads.

He told me that he dug a wide trench, so deep that after some top soil was thrown in he could set the cabbages out in the trench as close as they could stand, and their heads would not come up level with the top of the ground. When planted, he covers the trench with boards and some brush, cornstalks, salt hay, and earth on the top, keeping it open at the ends or elsewhere until cold weather, and then covering it in close. He said they would all have firm, solid heads in the spring.

I tried it, and at the time I write (April) we are enjoying the best cabbages we ever ate. They are rather small to be marketable, say 4½ to 6 inches in diameter, solid and sound, crisp and tender, as delicate as cauliflowers, and what is most remarkable, I never know when we are going to have cabbage for dinner until I see it upon the table. The great objection I have to this most wholesome and delicious vegetable is, that it usually fills the house with its perfectly detestable odor; so to have cabbage without this drawback is worth all the trouble it costs. If these winter-headed cabbages could once become known in the market, I am confident their merits would command for them a ready sale all through the spring. The cabbages in market at this season are pretty poor. They are very apt to be slightly decayed, and will keep but a little while, as they wilt at once, and soon after rot. I wish now that I had enough to test the market with, but I have not, and write this partly in hope that somebody else will do it next year.

State and District Fairs—1876.

American Institute	New York	Sep. 6—Nov. 1
Connecticut	Hartford	Sep. 12—15
California	Sacramento	Sep. 18—25
Chicago Ind'l Exposition	Chicago	Sep. 6—Oct. 9
Des Moines, Iowa	Burlington	Sep. 19—22
Illinois	Ottawa	Sep. 4— 9
Indiana	Indianapolis	Sep. 25—Oct. 18
Iowa	Cedar Rapids	Sep. 11—15
Kansas City Exposition	Kansas City, Mo.	Sep. 18—23
Michigan	Jackson	Sep. 12—23
Minnesota	St. Paul	Oct. 2— 6
Nebraska	Lincoln	Sep. 28—29
New Jersey	Wamly	Sep. 18—22
New York	Albany	Sep. 11—15
Northern Ohio	Cleveland	Sep. 11—15
Northeastern Iowa	Dubuque	Sep. 2— 4
Ohio	Columbus	Sep. 4— 8
Oregon	Salem	Oct. 9—15
Southern Ohio	Dayton	Sep. 25—29
St. Louis Ag'l & Mech'l	St. Louis	Oct. 2— 7
St. Joseph Ag'l Expot'n	St. Joseph	Sep. 25—30
Virginia	Richmond	Oct. 31—Nov. 3
W. Virginia Cen. Ag'l	Clarksburg	Sep. 19—21
Wisconsin	Milwaukee	Sep. 11—16

Horticultural Premiums.

The Massachusetts Horticultural Society has appropriated for the present year for premiums $6,800, divided as follows: Flowers, $3,200; fruits, $2,100; vegetables, $1,200; gardens and greenhouses, $300.

The Dairy.

Care of Dairy Utensils.

The *New England Farmer* says: All dairywomen are aware that every utensil used for milk, cream, butter, or cheese, must be kept scrupulously clean, but judging by the letters often published on the subject, all are not fully familliar with the philosophy of cleaning or of keeping them so. Wood, tin, stone, earthenware, porcelain, and glass, are all used more or less in the dairy for different purposes, but wood, tin and stone ware are most common. Glass would be our choice for packing butter for family use, if it were less costly and less liable to break, but these objections are sufficient to prevent it from coming into general use at present.

For milking, for setting milk, and for keeping cream, we have adopted good, heavy tin, as on the whole the most practicable of anything we have ever used. Every tin utensil used for milk or cream should have the joints filled as smoothly as possible with solder, so there should be no crevices in which particles of milk will lodge, making them very difficult to cleanse by ordinary washing. It would pay to soak all tin pails and pans for a short time in cold water before washing, if one had water both plenty and convenient, but few of us are so blessed. Cold or warm water only should be used for the first washing whenever the milk is sour enough to curdle in boiling water. Boiling water or steam will kill the germs of taint and putrefaction for the time being, but it will not remove the particles of sour milk as readily as moderately warm, or even cold water. After the utensils are washed as clean as possible, scalding in boiling water makes purity sure, but if they were absolutely clean, scalding would be unnecessary and a superfluous operation. But it was of wooden utensils we intended particularly to speak at this time.

Many people still use wooden milk pails; they are light and cheap, and if they could be kept perfectly sweet and clean, would not be very objectionable, but as it is nearly impossible to keep them sweet we long ago discarded them entirely, and have adopted tin instead. Tinware usually rusts out before it wears out, but a tin pail seldom if ever rusts, and a good one will last many years. The objection to wood is that it shrinks and swells every time it is dried or washed. Clean wood, with the pores all filled with clean water, would probably absorb but little milk during the half hour it was in use, but if the material is dry the milk is absorbed into the pores, where it is soon locked up by the swelling of the wood. When the wood dries again the water of the milk dries out, but the condensed milk, in the form of fat and curd, is held in the substance of the wood, and after a short exposure to the atmosphere, becomes rancid and putrid. We have all smiled at the innocence of the boy who sat patiently waiting in the sun with gudgeon grease on his clothes, that he might rub it off when it got dry, but we do little better when we expose wooden milk pails to the sun to dry. Grease once inside of a board will stay there, and, like grease on cloth, will only go deeper, and be more diffused through the material, by heating in the sun.

Formerly zinc was used for the lining of churns, but it did not give entire satisfaction, because of the tendency of the butter to adhere to it, making it difficult to handle. We suppose all butter-makers know that there is nothing better for handling butter than wood well soaked in water, but perhaps all do not know exactly why it is so.

We have seen at a neighboring butter factory a large, nice-looking marble table used as a butter-worker, and at first were a little inclined to harbor a slight feeling of envy, when we thought of our plain, wooden worker at home, but when the operator informed us that the butter would not clean readily from the marble, and also that it seemed to abstract the color from the butter that adhered to it, we were more than ever satisfied that good, clean, sweet, hard wood, well soaked in pure water, is, on the whole, the best material for butter-paddles, butter-workers, and butter-moulds. But why is it that butter does not stick to wood as to metal? Simply because the pores of wood fill full of water, and water and oily substances do not readily mix. If wood is used dry, butter will stick to it, because particles of butter enter the wood and one particle of butter will adhere to another particle. If we begin to work butter on a table, or press in a mould that is not fully saturated with water, the butter will enter the pores of the wood and we can do nothing with it, until we scald out all the butter that is in the wood and fill its place with water.

A clean piece of wood may be prepared for handling butter by simply soaking in water, hot or cold. Hot water fills the pores quicker than cold, but there ends the difference; greasy tools *must* be scalded before they can be used for butter. Having finished using wooden butter utensils, they should be scalded in boiling water to remove all the grease that adheres, and then dried in an airy place, but not in the sun.

Dairy Products at the Centennial.

Mr. Landreth, the chief of the bureau of agriculture, announces that special displays of dairy products will be held during the first week respectively of August and September.

The August exhibition will comprise only cheese; the September exhibition butter as well as cheese,—the cooler weather then permitting a display.

The exhibition of the past month having been such a full success, it is anticipated that equal energy will be displayed to assure the exhibitions of the two next months.

Awards will be made at these times in accordance with the rules of the commission.

LARGE YIELD OF WHEAT.—The *Montgomery* (Md.) *Advocate* says: Frank L. Bell, residing on a farm of George W. Mobley, adjoining the village of Daytonsville, raised 38 bushels of wheat to the acre by measurement, and 40 by weight. Col. G. W. Dorsey, on a ten-acre field, raised 412 bushels. The wheat was measured as it came from the machine.

Ruta Bagas in the South.

A correspondent of the *Southern Cultivator* writes thus of these valuable roots:

"Our crop should be planted from the latter part of July through August. I have made fine ruta bagas planted the last of September, where the winters were mild and favorable. The best time, however, for planting to secure an early crop and a sure one in this latitude, is through July and August. And what makes it the more valuable with us, it need not be housed or protected after being made. Cold winters that freeze and rot other varieties of the turnip, rarely injure this. And, if the tops are eaten off by sheep during the early spring, they will remain sound in the ground till June, after giving tender sprouts for table use before other garden salads come in. One can hardly be extravagant in his estimate and praise of this plant after giving it many years trial. And, though planting it so long, I never realized fully its value with us till last winter, when I fed it "ad libitum" to cattle, sheep and hogs, and my mules even would not refuse to eat them, as a change from their continual feed of corn and fodder. Hogs, with a very little grain, will thrive well on them. And now, being compelled to keep enclosed all stock, to secure it from being depredated upon, and from depredating upon our crops, we must learn to use the cheapest food and that raised with the least labor. As we more perfectly domesticate our stock by feeding in close quarters, we change and improve somewhat their taste for those things which, in a semi-wild condition, they would refuse to eat and really starve upon. With the diffusive system of stock husbandry, as well as planting, (under the old slave regime, now shattered and destroyed,) we must build up the future again with other means and resources a kind providence has given us. We are not poor, if we will appreciate and utilize the many crops our climate (with our soil) will produce through every month in the year; and this crop can be made to extend as a valuable food crop through six of the hardest and most expensive, with us, in stock husbandry. As to the manner of planting, I think there is but one good, sure way to secure the greatest yield. Breaking and pulverizing any ordinary land deep and well, lay off in rows three feet apart, open these wide and deep, and drill in or fill with manure. My favorite is a composted cotton seed with a commercial fertilizer."

Effects of Drilling Fertilizers with the Grain.

On the field of wheat sown for the purpose of testing the reaping machines exhibited at the Centennial Exhibition, a portion was given 1,000 lbs. per acre, sown broadcast, and the remainder received only 250 lbs., which was drilled in with the seed by Bickford & Hoffman's drill. When the grain was cut, the wheat where the fertilizer was drilled in was from three to four inches higher than where it was sown broadcast, and the difference was marked to the line all over.

The American Farmer.

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WM. B. SANDS, } Editors and Proprietors.

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AUGUST 1, 1876.

The Horticultural Society's Exhibition.

The executive committee has secured for the annual show of the society in September the capacious Academy of Music, on N. Howard street, one of the finest and most convenient buildings for exhibition and similar purposes in our city. The duration of the show will be extended from three to four days, and will include September 19th to 22d. It is proposed by the managers to make the display extensive and imposing. Not only will the main auditorium and the stage of the Academy be occupied, but also the concert hall, and the two cafés. The entire building will be handsomely adorned with growing plants and other decorations, and no pains will be spared to make this third annual show of the society not only interesting and instructive, but enjoyable and brilliant.

The Clawson and Fultz Wheats.

The first-named kind, so far as we have learned, does not seem in this section to compare in productiveness or hardiness with the Fultz. We should be glad to know the general experience of those who have tried both.

North Carolina Lands.

We again call attention to the lands advertised in our supplement, to be sold at public auction on the 21st inst. The section in which they are located is a promising one, agriculturally, and doubtless some bargains can be had by those disposed to invest in that quarter.

Ayrshire Cattle.

We received just as our July issue was being put to press, and too late to call special attention to it, the advertisement of Major W. B. Mathews' Ayrshires. It will now be seen that he has reduced the prices at which they were offered last month; and, as they are from the herd of one of the best-known breeders of Ayrshires in this country, they seem to offer an unusual opportunity to any one desiring to get into that kind of stock.

SCHOOL CATALOGUES.—We have received circulars of the Wheatdale Classical Institute, Culpepper, Va., Rev. H. S. Alexander, Principal, advertised in our columns; and of Bethel Academy, Fauquier Co., Va., Major A. G. Smith, Superintendent, which can be seen at our office.

THE WIDE-AWAKE for August is an even more than ordinarily interesting number of this attractive juvenile magazine, always well filled with serial and shorter stories, poetry and admirable illustrations. Subscription $2 a year. Lothrop & Co., Boston.

The Gunpowder Farmers' Club.

Messrs. Editors American Farmer:

The last meeting of the Gunpowder Farmers' Club was held July 1st, 1876, at the residence of Jno. D. Matthews, Dickinson Gorsuch presiding as foreman. The tour of examination was protracted and thorough. In a wheat field, from which our host's men were rapidly hurrying in a heavy crop of grain, a clover set showed much greater vigor on a portion of the field which had been treated two years ago to 200 lbs. of Whitelock on wheat following corn than the balance of the field which received none, though last year 200 lbs. had been drilled in on the whole. Our host's corn was remarkably strong and healthy, and glorying in a rich green color, which may be attributed to the use of the "Vegetator"—this fertilizer having been applied to the whole crop. The recent use of plaster was likewise apparent. The acre entered for the prize was covered with a rank, luxuriant growth of stalks and blades. On the round the members trespassed on a neighbor's field to examine the Clawson wheat growing there. It was pronounced, both in quality and yield, much superior to the Fultz.

The club discussed the following question: Is it advisable to perpetuate our meadows over from three to five years? If so, what is the best treatment for them?

S. M. Price—Should say not, in answer to the first question. He thinks four years, as a general rule, long enough. By top-dressing with manure they might be kept up longer and stand light pasturing in the fall; but according to their mode of rotation, he doesn't see how they

could keep them over. The great difficulty the last few years has been getting good sets. (*q.*) In the fourth year don't you get natural grass? (*a.*) Yes, a fine grass that doesn't make much hay. (*q.*) Isn't it better to plough the second year? By the fourth year you've got neither clover nor natural grass. The foreman answered: We expect to have clover the second year. If it goes to the fourth year we have no clover, and not much natural sod; but if allowed to run to the sixth or seventh year, a good natural grass sod is formed. S. M. P. (resuming) —Yes, if we can permit our land to stand so long. The plan he wants to carry out is to mow three years, pasture and manure on the surface the fourth. (*q.*) Is not that old natural grass sod more valuable after it has stood awhile? (*a.*) Yes; but unless the land is manured its strength cannot be kept up—there is an interval to bridge over. Like Jos. Bosley, he would sow orchard-grass for permanent pasture. He believed we can raise a better crop of corn from a clover sod than from an old natural grass sod. Clover roots penetrate the soil to a considerable depth, loosening it, letting in air, sun and moisture; they make it light and friable. The foreman said: In his experience, a sod of natural grass, especially after it has been used as a night pasture, is far better for corn than a clover sod.

I. M. Price—He thinks it hardly profitable to let meadows run over four years. In order to make timothy meadows pay, they ought to be top-dressed. His experience, though limited, satisfies him this is the best policy. To mow two years and plough would insure a larger crop of corn than to let stand longer without top-dressing. If we have the improvement of the land in view, we should rely more on clover, and sow less timothy. It has paid him best to sow clover in corn and plough in the next year for wheat.

W. W. Matthews inclined to the opinion that it would be better to perpetuate by top-dressing; thinks we plough too much. In view of the many failures we have in getting a set of clover, he would prefer sowing orchard-grass with timothy.

Jos. Bosley—With him it depends on circumstances. He has been in favor of mowing a meadow as long as it would pay. He has mowed and pastured as long as six years. After meadows get filthy he would plow them up. We can't continue clover long; he wanted a mixture of grasses. In the case in which he had a field in grass six years, the last crop was the heaviest he ever cut. (*q.*) Did the land show deterioration afterwards? (*a.*) Yes, he thinks it did; he gave it no top-dressing while it was in grass. The corn which followed was not so good.

Josh. M. Gorsuch spoke against the policy of continued mowing and pasturing. When he was a boy, farmers plowed their clover down; now they sell it. This is a disadvantage to the soil. Mr. G. mentioned several instances in his own experience where proper manuring had insured him a clover set. Formerly, when the manure was kept in the barn-yard, hauled out in the fall and applied to grain land, there were no failures in clover sets. (*q*) Did you ever think of what we lose by wash? (*a.*) That comes anyhow. He doesn't think the wash as injurious as cutting off so much grass. Clover roots are sufficient to keep up the fertility.

A. C. Scott—On his land it is not advisable to let stand over three years. He has never mowed longer than four years; does not let lie long enough to run into natural grass. He gets white clover if red misses.

Edwin Scott—Depends on circumstances and the situation of the land. He has land lying along Western run which he thinks it possible to keep in grass continually. In ordinary farming land it is better to plow after the third or fourth year. On strong land, blue grass will succeed timothy. (*q.*) Does the continued growing of timothy tend to impoverish land? (*a.*) Not more than constant cropping in grain without manuring.

Ed. H. Matthews—With them the ox-eye daisy has possession at the end of the second year; it would not pay to let stand longer.

Dickinson Gorsuch—He once thought the five-year rotations the best. He changed afterwards, and now allows his meadows to run into natural grass,—that is, he mows three years and pastures three years. He is not altogether satisfied with this system. Under some circumstances, it is best, under others impoverishes; but for the washing he would prefer the old system. He has no reason to complain of his grass sets. He has never had better than this season. He could not profitably pursue his present plan were it not for the manure which the dairy business enables him to accumulate. A field which he mowed for six consecutive years did not crop well afterwards. When it was set it was thoroughly manured and the ground carefully prepared.

Jno. D. Matthews—Jos. Bosley has expressed his sentiments on this subject. Most of the members will concede that the hay crop has been our most profitable one. Is it any more exhaustive than any other? Is the average return less than from a crop of wheat? With these facts before us, would it not be advisable to perpetuate the hay crop? By leaving the aftermath the hay crop is not exhaustive. On the field heretofore referred to, from which he had taken nine crops of grass, liming after the third, he had raised 15 barrels of corn per acre, which was the next crop in rotation. The average price of hay for the last few years has not been less than $20 per ton, which at 1½ tons per acre gives $30. Cost of sowing will not exceed $2 per ton. He contends hay is the most profitable crop we can raise. Josh. M. Gorsuch asked whether this growth of grass was not at the expense of the succeeding crops of grain; where is the manure to come from? (*a.*) When we take off a crop of grain is there no loss? J. M. G.—Grain gives us something to return in its straw. I. M. Price—If the product of the land is fed and returned, he agrees we can keep on mowing. D. Gorsuch—He thought there was a considerable amount of droppings from timothy which benefitted the land.

N. R. Miles—Thinks two years mowing and leaving the aftermath a better plan than to continue the mowing, unless the land is an extra piece. Our lands deteriorate under constant mowing, unless we adopt the dairy busi-

ness or use fertilizers; they get filthy. If he had briars or garlic he would pasture cattle. Observation, as well as his own experience, teaches him that this is an effective plan. In our general way of farming we cannot keep a meadow going so as to prove profitable over four years, unless in the dairy business. Thinks, with Jno. D. Matthews, that we lose by taking off the aftermath—there is our profit, especially in a clover lay. We would not have so much trouble in getting clover sets if we did not take off the second crop.

Jno. D. Matthews stated that in his case of nine years continuous manuring of a field, all the aftermath had been left on. He was not pasturing at that time. The older his sods the better they were.

Edw. Austin (a guest)—He would not sow timothy unless his ground were fertile. He would not sow with clover. If successful in getting a good stand, he would mow from six to ten years, or as long as the stand continued good; would supply to the land in manure or fertilizers an equivalent to the crop removed. He believes experience will show that a sod gathers something every year, unless we pasture too close.

Thos. F. Matthews (a guest)—He would never break a sod if he could help it; if it did not pay to cut it, he would graze as long as it paid.

Baltimore County, July 24, 1876. T. G.

Report of Inspection Committee.

To the Gunpowder Agricultural Club:

Your committee of inspection at D. Gorsuch's on the 3d June last respectfully report:

As far as our observation extended, the same careful supervision was apparent that has been alluded to in previous reports,—presenting neatness, system and general good management at all points, except a few very vigorous growing docks loaded with seed, which we think must have escaped his previous notice in the management of a large farm.

The arrangement of the manure pile in the barn-yard showed how careful he is to utilize all the material practicable to increase its bulk and efficiency.

Our attention was called to different fertilizers applied to potatoes. From the results then apparent, Peruvian Guano was superior to the rest. Turner's Excelsior came next, and, not so good, Zell's.

The growing corn claimed our attention, in which was a two-horse corn-worker (Hawley's "Granger") with four shovels, doing its work very satisfactorily.

In the corn experiments had been tried, with hen-manure, the following commercial fertilizers: Whitelock's, Turner's and Bollinger's. The results were all beneficial; but, owing to unequal distribution, no satisfactory relative difference was apparent.

Our host was advised to apply lime for the eradication of sorrel on a small piece of pasture land.

JNO. D. MATTHEWS,
JOS. BOSLEY,
ED. SCOTT.

Poultry Yard.

About the Chickens.

A correspondent of the *Country Gentleman* writes as follows:

By the middle of July the last hen should be set, in order that the chicks may come out by the first week in August. Later than this there is little profit in raising chickens. The cold rains and long, damp, chilly mornings of September catches them in their scant feathering, and causes them to be so stunted that they seldom recover from it, and never become full-sized, profitable birds. From the first to the middle of July, all the early-hatched broods of the common breeds and mongrels are fit for broilers, and should be thinned out, taking first those that are in the best flesh and sending to market alive in commodious, comfortable coops. July broilers command a fair price, and quickly repay all the expenses and trouble of raising. Very early hatched spring chickens are difficult to rear, but are worth nearly double those later hatched. A good way is to select all the cocks from the early hatched broods; and confine by themselves, and force them up to market fitness as fast as possible. Young cockerels should never be allowed to run with the hens and pullets, more especially the early-maturing breeds, such as Leghorns and Bantams. The Asiatics are slow maturing birds, and may be suffered to run at large, with little fear of tormenting the pullets. Early-hatched pullets make fine fall and winter layers, and for this purpose are really too valuable to sell for broilers.

Perhaps every one does not place so high a valuation on the production of eggs as the writer, whose business has been for a period of ten or fifteen years immediately connected with the raising, producing, packing and marketing of eggs, and consequently has learned by experience just how much value to place on a good layer. For this end, pure breeds should always claim a preference over crosses, although often times crosses prove valuable; but, as a general thing, are not so reliable. In a brood of fifteen one might get a half-dozen pullets, and it is luck if all of them prove good layers. The chances are that out of the six, two or three may be fine, rate, and the others worthless, having too great a tendency to fatten. Over-fatness destroys the egg production. A first cross of two good breeds, however, is oftentimes beneficial, and produces some fine layers, but the breeding in and-in of mongrels breeds out in time all the good points for either flesh or eggs.

By midsummer all the pure-bred cocks of the smaller breeds begin to show their points, and can be assorted, and the deficient ones placed by themselves for table use, and not allowed to run and fight those that give promise of becoming fine birds. Exhibition chicks can now be culled and given better attention when placed apart than when allowed to rough and tumble it with the whole flock. We must not expect to raise all exhibition chicks, neither can we raise those that are good for stock purposes. We must have many indifferent birds. One exhibition bird each year should satisfy the amateur, who should never sell his very best birds, no matter what

the price may be. This selling, if continued year after year, impoverishes the stock, and brings them back to a virgin state. Always save the very best for breeders, and there is little difficulty in producing valuable birds. Early chickens are more likely to become fine than those later in the season. They have the finest portion of the year to grow and develop in, and are less likely to become deformed. A wry tail or a crooked breast-bone is a deformity in any chick, and should be guarded against. Too often these mishaps come from bruises while young and the bone and muscle are soft and pliable. Breasts are made crooked by roosting too young.

Chickens like clean, good-sized poles to roost on, entirely smooth and firm. It is an erroneous idea that one kind of wood is less liable to contract those pests known as roost-lice than another. The roost should be smooth and free from loose bark. Sassafras, on account of the rough nature of its outer bark, is perhaps the very worst wood that can be employed in the roost. The deep crevices form hiding-places for these most troublesome pests during the day. Frequent whitewashing with good lime will entirely exterminate them, and greatly benefit the birds. Remove the droppings often, and lice will not trouble the roosts much.

Toulouse Geese.

This breed is thus described by a writer in *The Poultry Nation:*

This variety is doubtless the largest known. Men in general have an aversion to geese, and we don't blame them either; for what could the little, noisy, voracious, unruly common geese be considered on a farm but a nuisance, unless securely penned in some swampy field? This natural aversion we were not exempt from till we tried the magnificent Toulouse, and then it was changed to a liking for these geese. In appearance, they are noble and dignified, and will thrive without water to swim in, if plenty be provided for drink. They are never unruly, and can be fenced as easily as sheep; are very quiet, not noisy, and extremely hardy. They are good layers, averaging about forty eggs each in a season, and are seldom broody. If the old stock is not kept fat, and after spring opens only on pasture and vegetables, without grain, nearly every egg will hatch.

The goslings are much stronger when young than the common, and are more easily raised than a pig. We use hens for hatching, and in summer have placed them on a fresh grass-plat, and reared them without any mother. Their growth is so rapid that at four weeks old they will weigh from six to eight pounds each, and at three months from fifteen to eighteen pounds. At four weeks old they need no further housing, and can be taken from the nursery and placed in the open pasture to graze and shift for themselves, provided they have their regular meals of soft feed, which should be continued till they are three or four months old.

In France and England, Toulouse geese are prized for their great size, excellent flesh, and abundant yield of soft, fine feathers, of which they will average about half a pound to the "picking," and would be profitable for this purpose. In the severest weather they require no shelter, and we never feed mature birds any grain when the ground is bare, where they have access to the pasture fields.

In color, geese and ganders are exactly alike, viz: a uniform, handsome gray, with breast and underparts of body a shade lighter. They are so mild and tractable in disposition, and possess so many good traits, that they are profitable where they can be kept, and especially where grain and grass are cheap. There are hundreds of waste places upon which, with a trifling expense, large numbers of these geese could be raised. To show how prolific they are, we have known, for two seasons past, one hundred goslings to be raised each year from the eggs of eight females, besides a large number being sold for hatching purposes. For all purposes, the Toulouse should be voted the "goose of the period."

The Apiary.

Experience with Bees.

Julia M. Wheelock, in writing to the *Patron's Helper* on her experience with bees, says:

"Many persons who have kept bees on the old plan have a strong impression that they should not be meddled with, and think that the little workers can and will do all their 'house-cleaning' in spring, attend to all their family matters, increase at their own pleasure, and lay up stores for future need, better without assistance than with it. A case of this kind came under my observation this season, the relation of which may be of benefit to some of your readers. Neighbor A. had, by the advice and success of his friends, who were controlling their bees advantageously, been induced to adopt such hives as were convenient for examining bees, and really seemed to feel that he was trying the 'new way' of bee-keeping, but for some reason he had not visited them this year, and it was then near the middle of June. He had walked near the hives, and discovered that some of them were not so busy as were some others; and mistrusted that there might be one hive at least without a queen, in which case, as apiarians well know, the whole family must, sooner or later, die.

"At this time we were induced to examine neighbor A.'s bees—some less than fifteen swarms—and found many swarms apparently doing well as to honey, and raising brood, but having never 'cleaned house' this spring. The dead bees were from one to two inches thick on the bottom of most of the hives, in the midst of which were brown moths, cockroaches, ants and some other insects, drawing sustenance from this filthy mass, which the bees had not been able to remove. The hives were then carefully cleaned. But this is not the object I had in telling this, but simply to urge upon those who think that the bees should never be disturbed the importance of ascertaining whether they need assistance or not. In the case referred to the bees could not have removed the rubbish, however annoying it must have been to the little laborers, whose strength is limited, except in self-defence. They undoubtedly, in some cases, throw

dead bees and other filth from the hives, but they do not always do it, even when they are strong in numbers and rich in stores. I have seen many colonies this year which had dead bees still clinging in the comb, where they had died last winter or spring, and, contrary to our general supposition, had not been removed by the living bees. Whether the honey came earlier in flowers, and they considered their time demanded in the field or not, we cannot tell, but suppose the labor requisite for house-keeping must have been beyond their abilities, as they are supposed to have a just estimate of what they can perform. In raising broods, they have such correct estimates of their strength and capacities, that the increase of honey will cause the queen to lay more eggs, or a decrease of honey will cause her to diminish the quantity. And in cases where dearth of honey comes suddenly, from drouth, or grasshoppers, or other cause, bees have been known to destroy some of their brood, where they had more than they could feed and take good care of.

"The bee-keeper should always carefully examine his bees in spring, and remove all dead bees (or anything else which may become offensive) from the hives. Sometimes it is best to remove moldy combs as worthless, although the bees sometimes clean such combs; but it is a question whether they could not build a new comb nearly as quick, and with more safety to themselves, as mold is known to be very poisonous, and must have a deleterious effect on the bees, while removing it from their combs."

Agriculture and Civilization.

John T. Jones, the Master of the National Grange, gives utterance to the following eloquent sentiments:

"Let me urge you, then, by all that you hold dear—liberty, family, fortune, country—to stand shoulder to shoulder, and move in solid column on the enemies' works. The subordinate Granges are the life-blood of our system, and give to it all its power, moral and active. When any of these sources of life and power fail, however remote, the head and heart feel it.

You may not realize at once, or for a time in your own Grange, the advantage you hoped for, and which must come in time if you earnestly persevere, but bear in mind the general good to our class and country which we have already accomplished, the largely greater benefits which we may secure individually and collectively, be united and earnest in our work, and our success will be assured. Power and superiority are the rightful attributes of our class, instead of weakness and dependence. Without agriculture there is no wealth. Gold and silver are not wealth, they are its convenient representatives; commerce produces no wealth, it simply exchanges it; manufactures and the arts combine it. Agriculture is the prolific mother of wealth, the rest simply handle it when produced and delivered into their hands.

The earth breeds savages; agriculture breeds enlightened nations; it breeds houses and ships, temples and seminaries; it breeds the manufactory; sculpture, painting and music are its offspring. The wheels of the workshops, the sails of commerce, the implements of science, the pen of genius, the pencil and chisel of the artists, the eloquent tongue of the orator, the scheming brain of the statesman, the equipages of wealth, the banquetings of pleasure—all that renders earth in its tide of life anything but a great sepulchre, move and have power of being because the fields yield their fruit to the patient toil of the husbandman.

We might manage to live without merchants, without mariners, without manufacturers, without orators, without poets, perhaps we might possibly survive the loss of demagogues, but sure I am we could not live without plowmen.

The state of husbandry in any country is the best test of its enlightenment. The thermometer of civilization rises or falls as drives the plow. You must send the plow, exclaimed a man who had traveled all over Christian missionary ground in heathen lands; a barbarian nation needs but to be plowed up, deep subsoiled, sowed, planted, and the inevitable harvest will be an enlightened empire.

The True Objects of the Grange.

In a circular addressed to the officers of County Granges, the master of the State Grange of Tennessee says:

"The farmer must be educated, must be taught and practiced in the fundamental principles of the Order, as originally laid down and enunciated by the authors of the movement. He must be led to see and know that the chief corner-stone of this magnificent agricultural temple is not money. He must be made to feel and realize that the Grange was not originated for the mere purpose of making and saving money, but that it was conceived for nobler purposes, was brought forth with grander aims, and should and will accomplish more exalted ends. He must be taught that the Grange has for its object, first, the organization of farmers and their families, bringing them together into one close, compact union, into a brotherhood, actuated by one common hope and common interests; second, a school for farmers, where they can be taught to read more, think more, study more, and talk more with one another about the farm and the home; third, the cultivation and growth of the social qualities of the farmers. When the cultivators of the soil are organized, educated, and rendered less selfish by the practice of all the social amenities of life, then will follow, as natural sequence, such co-operation and advantages in trade as will be adequate to the means employed. For the accomplishment of this grand work, an active, faithful and energetic performance of your duty is imperative. It is made the duty of the master of the State Grange to see that the constitution, by-laws and usages of the Order are strictly enforced, and to hold each officer "to a strict performance of his duty."—You are therefore instructed to visit each subordinate Grange in your county at as early a day as practicable, and instruct the members, "not only in the secret work, but also in the objects, aims and intentions of the Order, and the best means of advancing the interests of the Grange."

being "vigilant that no disorder shall obtain in the Granges in your jurisdiction," and if any should obtain, promptly report the same to the master."

Commenting on this, the agricultural editor of the Nashville *American* offers the following sound doctrine:

"Knowledge is the best capital a man can have in farming, and the Grange organization contemplates its steady growth and earnest culture. Many have no taste for mental discipline and advancement; and to such the Grange movement is a "fraud" or a "humbug." To them life is to be divided between getting money and spending it for animal gratifications. They create the necessity for armies to contend one against another for war's despotic power in government and heavy taxes. More wisdom among the owners of the soil would easily prevent these evils; and the design of all true Patrons of Husbandry is to plant the seed of this wisdom. If farmers worked as hard to cultivate their intellects as they do the soil, they would soon be able to choose one of their number president. But now in this nation of practical farmers, no man seventy years old can remember the time when a farmer was elected Chief Magistrate of the Republic. Why is this? We are happy to know that the officers of the State Grange of Tennessee have labored earnestly to remove this discredit from American agriculture as a profession. There is but one way to elevate our calling, and that is to develop the mind devoted to it. Every Grange should have a library for the use of its members, that they and their posterity may not always be mere hewers of wood and drawers of water for learned and patronized pursuits in society. Without giving more attention to the principles of sound legislation, farmers can never protect their interests in a community full of schemers, speculators, thieves and robbers. Constant devotion to the duties of the farm implies neglect of public duties, which supplies opportunities to rogues and trading demagogues. Eternal vigilance is the price that must be paid for any liberty worth having. Watching, however, is not sufficient. The men who watch, if not fully informed, are liable to be deceived and cheated by educated rascals. Pure men vote for bad laws through carelessness, ignorance, or both. Our duties as citizens must be studied."

Care of Mowing Machines.

By the time this reaches the eye of the reader the mowing machine will be put away for the season; but how has it been put away? Too often the cutter bar is folded upon the frame, and by its unevenly-distributed weight will twist the wood-work, and thus throw the shafting out of line, to the material injury and greatly increased wear of the machine. Often the bar is left on the ground or floor, but in a position with reference to the driving wheels which produces nearly the same effect as if laid on the frame. In most, if not in all machines, it will be found safest to remove the bar entirely, and thus do away with the prime cause of trouble. Much needless wear is caused by the use of inferior oil: a striking illustration of the Spanish proverb of saving at the spigot and leaving the bunghole open. One pint of the best sperm oil, costing thirty cents, will answer for the harvest of a hundred-acre farm, and for the ordinary grass of such an area one-half this amount may do. If I was limited in the amount to be expended for this purpose, I would invest in the very best article I could find, knowing from experience that three drops to each journal will do more good than a teaspoonful of low-grade whale oil. The use of poor oil also causes greatly increased draft on the first four or five acres cut next season by drying on the journals during the time of idleness. It pays to use a few drops of coal oil at different times when cutting the last two acres. Many of our farmers do not fully appreciate the fact that in wear, interest and repairs their mower costs them at least $30 per year, and that by the use of good oil, and care in putting away, at least one-third of this might be saved —*Ex.*

Hiring Horses.

It has been decided, says the *Turf, Field and Farm*, that when a horse or carriage is let out for hire, for the purpose of performing a particular journey, the party letting warrants the horse and carriage fit and competent for such journey. If the hirer treats the horse or carriage as any prudent man would do, he is not answerable for any damage either may receive. But he must use the horse for the purpose for which he hired him. For instance, a horse hired for saddle must not be used in harness. If the hirer violates this express condition of the contract, he is liable for any damage that may occur. If the horse is stolen through the hirer's negligence, such as leaving the stable door open all night, he must answer for it. But if he is robbed of it by highwaymen, when traveling the usual road at usual hours, he cannot be held for damages. As these questions are frequently in dispute, it is not out of place to shed a little light upom them.

Virginia Agricultural and Mechanical College.

From its President, Dr. C. L. C. Minor, we have received the catalogue for 1875-76 of this institution, which seems to be in a flourishing condition, and the next session of which begins on the 14th instant. The students the last session numbered 255.

The farm comprises 325 acres, and is well equipped, the students being taught, practically, the most approved methods of cultivation under the direction of the professor of agriculture and the farmer. In the mechanical department a well-stocked workshop, supplied with steam power, machinery and tools, is provided. The necessary expenses of a student range from $159.50 to $232 for the session of ten months, and these figures may be reduced by the system adopted of compensated extra labor on the farm, for which students are liberally paid. Students must be sixteen years of age to be admitted.

Suggestions about Breeding.

BY PROFESSOR JAMES LAW.

1. A perfect development and sound, vigorous health, constitutionally, especially in the generative organs, are conditions of fertility.

2. In the maintenances and improvement of a breed, the truth that "like produces like," that the reproductive germ will stamp upon the animal developed from it the characters of the parent organism, is the backbone of success.

3. We can, in a great degree, at will produce variations and improvements in breeds, as by abundant feeding, a mild and salubrious climate, a rich and healthy soil, moderate use, education, stimulation, or selection of desirable qualities; by disease or rejection of undesirable characters and properties; by soliciting the weight of imagination in our favor; by allowing the breeding animals to mix only with those of the stamp desired; by crossing less improved breeds systematically with mates of a better race, and by crossing animals faulty or deficient in some particular point with others in which this point is developed in excess.

4. The herding of pregnant high-class animals with low-bred ones, and the resulting attachment between the two races are to be especially avoided, as occasionally affecting the progeny injuriously; strong impressions from a new or unusual condition of surrounding objects are to be equally guarded against.

5. If a valuable female is allowed to breed to an inferior male, she cannot be relied upon to produce pure-bred animals for several succeeding pregnancies. Through a strong and retained impression, through the absorption into the system of living particles (germinal matter) from the fœtus, or through some influence during pregnancy on the ova, then being most actively developed, the good or bad features of the first sire are perpetuated in the progeny of succeeding ones.

6. All breeds show a tendency to "breed back," or to produce offspring bearing the marks of their less improved and comparatively valueless ancestors; hence, individuals of this kind must be rejected from the best breeds if we would maintain their excellence.

7. Certain races and individuals have their characters more fixed, and will transmit and perpetuate them in greater proportion than others with which they may be crossed. If their qualities are desirable, they prove highly valuable in raising other stock of greater excellence. If undesirable, they will depreciate the value of any stock crossed for many generations. That fixity of type, however, is above all, a characteristic of those which have been carefully selected and bred up to a certain standard for many generations, so that in our best, longest established and most esteemed breeds we have a most valuable legacy left us by the successful breeders of the past with which we may mould our inferior races almost at will.

8. While breeding continuously from the nearest relations tends to a weakened constitution, and the aggravation of any taint in the blood to sterility, these may be avoided by infusing at intervals fresh blood of the same family which has been bred apart from the branch of it for several generations. Moreover, the highest excellence is sometimes attained only by breeding very close for a time.

9. Diseased or mutilated animals are generally to be discarded from breeding. Mutilations resulting from disease existing during pregnancy, and disease with a constitutional morbid taint are, above all, to be dreaded as transmissible.—*N. Y. Herald.*

Super-phosphates—How Esteemed in England.

The following article from a correspondent of the *English Agricultural Gazette*, shows the estimate formed of this manure:

"Theories and experiments are all good in their way as they go, but a few facts outweigh them all. On good loamy soils, well worked and finely pulverized, 10 cwt. of super-phosphate is by no means an overdose. Crops of turnips and cole seed are thus produced of extraordinary weight and quality, and what is more, in the succeeding year, the crop following partakes of the dressing, which is readily seen. For potatoes or mangels it has not been ascertained to what these aids may profitably extend. Very heavy crops of potatoes are now standing, produced from 12 cwt. of super-phosphate per acre, without other aid; and the wheat crops after such management are splendid. Seven cwt. per acre, along with farm-yard dung for potatoes, is the lightest satisfactory dressing, as is shown from hundreds of instances.

For mangels it is almost impossible to decide as to the best quantity to be applied. One fact is well known, the grower uses from 20 to 30 cwt. of super-phosphate per acre, together with farm-yard manure and salt when the plant is forward. The produce (which are Long Yellows) has exceeded 63 tons of manure (besides their leaves) per acre for the past six years in succession. The field is six acres in extent, and a loam of medium quality. The above must suffice, for many facts could be stated of extra produce from extra dressings. The object in penning this short paper is to show that much greater produce may be profitably realized by the more liberal use of chemical acids.

The American Nurserymen's Association.

An organization under this title has been formed, and held its first meeting in Chicago in June. E. Moody, of Lockport, N. Y., was elected president, with a vice-president for each State represented, Mr. W. D. Brockendge being chosen for Maryland. D. W. Scott, Galena, Ill., was made secretary.

The principal topics discussed were the trials of nurserymen and dealers in getting their stock carried promptly and at reasonable rates by the railroad companies; the collection of statistics by which growers and dealers can better know the condition of the market throughout the country, at all times, and the need of a reduction in the rates of postage charged upon third-class matter sent through the mails. There were about a hundred nurserymen present from various parts of the Union, and all had a good time.